STEEL

PRODUCTION

PROCESSING

DISTRIBUTION

USE

EDITORIAL STAFF
E. L. SHANER
EDITOR

ASSOCIATE EDITORS
E. C. BARRINGER, A. J. HAIN, G. H. MANLOVE, E. A. FRANCE JR., E. F. ROSS, J. D. KNOX, A. H. ALLEN, GUY HUBBARD

New York
E. C. KREUTZBERG, B. K. PRICE, L. E. BROWNE

Pittsburgh
W. G. GUDE

Chicago
F. B. PLETCHER

Washington
L. M. LAMM

London
VINCENT DELPORT

ADVERTISING STAFF
G. O. HAYS
BUSINESS MANAGER

New York
J. F. AHRENS, E. W. KREUTZBERG

Pittsburgh
S. H. JASPER, C. B. HUMPHREY

Chicago
L. C. PELOTT, C. A. WARDLEY

Cleveland
JOHN HENRY, R. C. JAENKE

CONTENTS

March 21, 1932

THE WEEK IN STEEL 15

Steel Tax Burden Heavy, Equaling Price Loss in 1931 17
Business News from Washington 19
Steel on Great Lakes: A Half Century of Development 20
Industrial Men in the Day's News 21
Obituary 22
Mirrors of Motordom 23
Financial News of the Steel Industry 24
Here and There in Industry 25

EDITORIAL—Industry Has Big Stake in Budget Balancing 26
THE BUSINESS TREND 27

Beam Mill Rolls Wide Flange Structural Shapes—Part II 31
75 Miles of Welded Piping in New Hospital Unit 34
Sleeve-Type Roll Neck Bearing Connects to Oil System 35
Making the Most of Steel 36
Large Uses of Steel in Small Ways—Bullet Cores 38
Testing Materials Society Committees Revise Standards 40
Progress in Steelmaking 42
Scanning the Technology of Steel 43
New Equipment 45

MARKET REPORTS AND PRICES 49-67
CONSTRUCTION AND ENTERPRISE 68
NEW TRADE PUBLICATIONS 68
WHERE-TO-BUY DEPARTMENT 71
ADVERTISERS' INDEX 87

STEEL is published every Monday by PENTON PUBLISHING CO., Penton Building, Cleveland, O. C. J. STARK, President; J. D. PEASE, Vice President; F. V. COLE, Secretary. Member, Audit Bureau of Circulations; Associated Business Papers Inc., and National Publishers Association. Branch Offices: New York, 220 Broadway; Chicago, Peoples Gas building; Pittsburgh, Oliver building; San Francisco, Alto building; Washington, National Press building; Cincinnati, Schmidt building; London, Caxton House, Westminster, S. W. 1; Berlin, Lichterfeld-West, Dahlmerstrasse 64a, Germany. Subscription in the United States, Cuba and Mexico $6 per year; in Canada $8.60; in Great Britain and European countries £2:8s.

Entered as second class matter at post office at Cleveland under the Act of March 3, 1879. *Copyright 1932 by the Penton Publishing Co.*

FOR TRUE ECONOMY *and utmost* DEPENDABILITY

On many types of welding, tough, strong, absolutely reliable welds are essential. Certainly it is false economy to use any but the best welding wire on such jobs—when welding wire cost is almost invariably insignificant compared with the cost of welding labor.

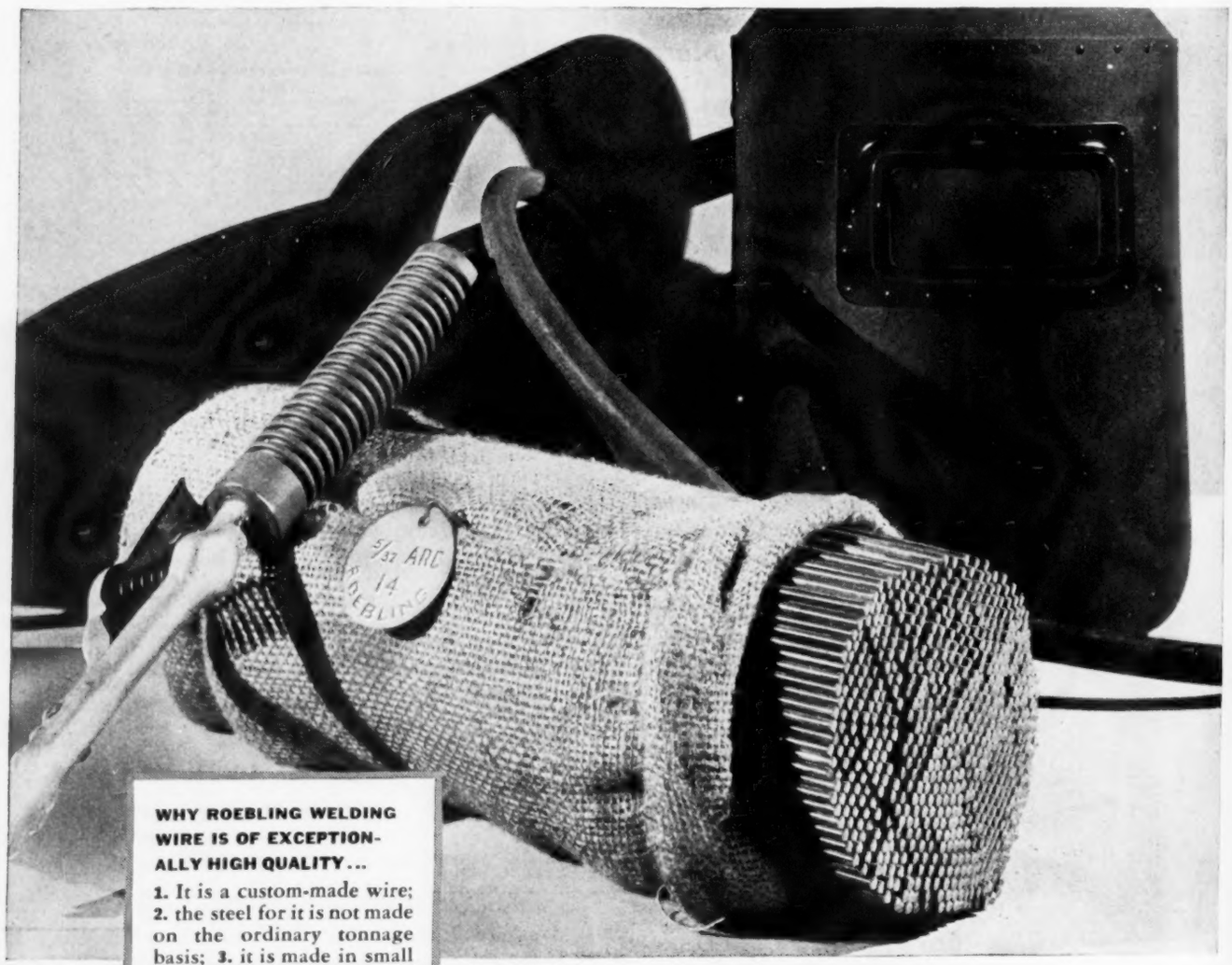
Roebling Welding Wire is made for those who demand a wire which facilitates the production of welds of utmost dependability—who know that such a wire spells true welding economy.

It is a custom-made wire of special welding steel—produced by special methods—and is available for both electric and gas welding.

Test this fine welding wire and convince yourself of its exceptional dependability and economy. Our nearest office below will gladly supply samples and complete information.

JOHN A. ROEBLING'S SONS CO. - TRENTON, N.J.

Atlanta Boston Chicago Cleveland Los Angeles New York Philadelphia
Portland, Ore. San Francisco Seattle Export Dept. New York, N.Y.



WHY ROEBLING WELDING WIRE IS OF EXCEPTIONALLY HIGH QUALITY...

1. It is a custom-made wire; **2.** the steel for it is not made on the ordinary tonnage basis; **3.** it is made in small open-hearth furnaces; **4.** of special melting stock; **5.** and is produced by Roebling's special methods; **6.** painstaking care is exercised throughout manufacture.

ROEBLING

THE CUSTOM-MADE WELDING WIRE—FOR EXACTING WELDERS

Volume 90 Number 1

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

The Week In Steel

STEEL producers may feel only indirectly the incidence of the sales tax proposed in the revenue bill now perplexing congress and arousing some insurgency in both political parties, and in view of decreased earnings filed their March 15 federal income tax returns with comparative equanimity, but the burden of state and other taxation is becoming more onerous. If the experience of the United States Steel Corp. be typical, all taxes paid by producers in 1931 added $4.62 to every net ton of finished steel sold (page 17). Last year the federal income tax of the Steel corporation was only $80,000, but state and local taxing authorities exacted 419 times this sum.

Concessions Would Have Paid Taxes

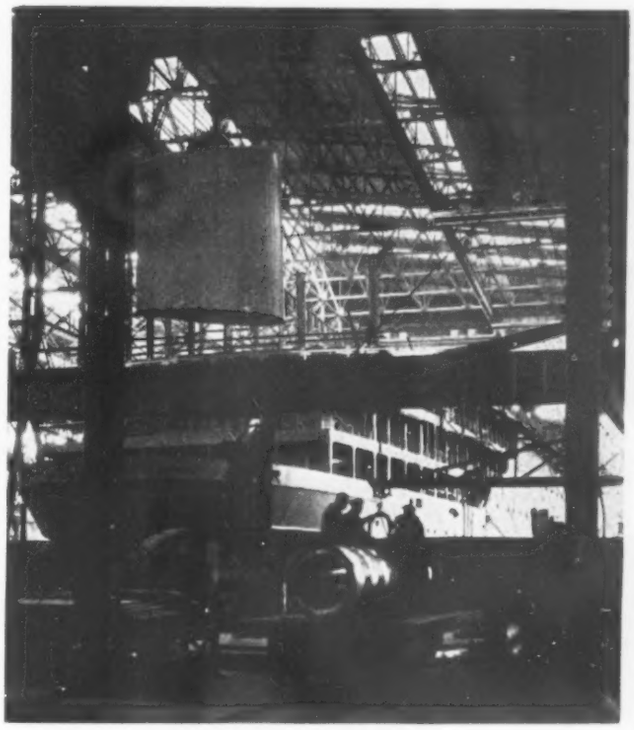
To relate this staggering, unbalanced total to the market situation, the sum which producers of steel passed along to consumers in the form of price reductions in 1931 practically equals the sum paid out for all taxes. This suggests that an overhauling of taxation be an early phase of the Reconstruction Era, but with local unemployment relief agencies clamoring—and probably justly—for more funds and first summaries of the March 15 federal income tax returns indicating a shrinkage of 20 per cent, the immediate task of ferreting out sufficient revenue to balance budgets may obscure any rationalization of methods.

Needless Anxiety, Over-Eager Optimism

While taxes other than federal income are a continuing and positive drain upon steel producers' treasuries, there is even more discouragement in the approach of the final days of the first quarter, terminating a period which has been the exact reverse of normal (page 49). Automotive requirements still are a hope instead of a reality, railroad demand is developing so slowly as to be barely perceptible, other consuming lines in the aggregate are at a lower ebb than a month ago. First quarter output of open-hearth and bessemer ingots probably will not exceed 4,500,000 tons, 40 per cent below the 7,954,456 tons of the first quarter of 1931, and prices are off 6¼ per cent.

Come To Scoff, Remain To Pray

But Charles M. Schwab, he of the long view, can pierce the fog and visualize the year when 100,000,000 tons of ingots will be made in the United States (page 18). To those whose only comment is "oh yeah" it may be pointed out



Nineteen tons of steel plates were required for one of the funnels fabricated for the United States liner MANHATTAN, largest commercial liner ever built in America, now at Camden, N. J., yard of the New York Shipbuilding Co.

Acme Photo

This 17½-ton platform, of steel and castings, for the new 40-inch reflecting telescope at the naval observatory, Washington, is from the Baldwin-Southwark Corp., Eddystone, Pa.

that the 70-year Bethlehem veteran has never made a long range production forecast that has not been borne out. . . . This 100,000,000-ton year will be hastened if the persistent effort to erect a fence around the United States and bar imports succeeds. Another effort to proscribe Russian imports has failed (page 19) because the treasury can find no basis for it in law, so soviet manganese will continue coming in.

Ford Mystery About To Be Solved

Successive forecasts concerning the introduction of the new Ford fours and eights insure that the event eventually will be laid by the heels, but the activity at the Rouge plant in Detroit and at Ford showrooms the country over presages the debut within a week or ten days (page 23). Hupp through ingenious merchandising has discovered that bargains will sell, Buick is stressing its lowest-price models, Ford hopes to capture elusive dollars by exceptional value.

Alloys Find Ally in Depression

Intensified research to reduce costs without sacrifice of quality or service frequently finds a solution in alloys. . . . Cast irons with a high alloy content have been tested, and apparently with success, for automobile crankshafts and camshafts (page 23), the fact that the tensile strengths and elastic limits of these irons almost coincide making for great fatigue value. . . . . A thin coating of chromium on dies used in the Philadelphia mint for stamping nickel coins was found (page 36) to prolong the life of the dies and improve the quality of the coins. . . . Alloy steels of the stainless types are being used (page 36) for name plates.

More Profit in Inventory than Cash

A less pacific use of alloys is in the manufacture of bullet cores for government ordnance departments (page 38). Screw machines turn out 15 per minute, and in the past decade over 8,000,000 cores of one caliber alone have been made. . . . Substitution of alloy entry guides on diamond passes of bar and billet mills has lengthened the life of guides six times for one mill (page 42) and permitted inventories to be reduced to one-fifth. . . . Commenting on inventories, the president of a large steel producer sees more profit (page 18) in maintaining a moderately-large inventory and affording more continuous operation of his mills than in converting his inventory into cash.

Where Pipe Goes, It Can Be Welded

Welding embarked on an errand of mercy recently when, in a hospital and medical clinic group in the East, nearly 60,000 diameter inches of acetylene gas welding were made on 75 miles of steel and wrought iron piping (page 43). The pipe, ranging from 2½ to 24-inch and weighing 750 tons, was laid out on the job, and considerable ingenuity was required to weld the many sharp turns, loops and crossovers in restricted spaces. . . . For paneling in such structures and for pipeline protection a laminated steel and felt corrosion-resistant material (page 35) has been developed.

New Bearing Smooths Mill Operation

For rolling mill operators is a new sleeve-type roll neck bearing (page 35) which is fully inclosed and lubricated with oil supplied by a circulating filtering system. Roll necks are not used as journals; they are provided with accurate sleeve journals in the unit construction and when bearings are changed the entire unit, including the journal, is removed intact. . . . Adopting the nomenclature of the automobile industry, no sooner is "free wheeling" applied to the feed rolls of cold strip mills (page 42) than the windshield cleaner principle is adapted for polishing the top and bottom rolls of hot sheet mills while in operation.

Steel Tax Burden Is Heavy, Equaling Price Loss In 1931

THE steel industry in 1931 apparently was forced to give away in price reductions a sum nearly equal to the amount of its taxes. And its taxes were among the largest items in the cost of production.

This is indicated by the United States Steel Corp.'s pamphlet report for the year, recently issued, listing tax disbursements as $33,242,707.

The report states the average price received for the total tonnage of rolled and other finished steel products shipped in 1931 was $4.48 per ton less than in 1930. On the year's output of 7,196,017 tons the loss due to price declines, therefore, was approximately $32,238,156.

Its taxes exceeded this figure by $1,004,551, but the taxes included levies on some properties not related to steel manufacture. Taxes on mining, transportation, manufacturing, selling and distribution of steel affected all other producers, directly or indirectly, in similar degree; as did reductions in steel prices.

Tax About $4.62 Per Ton of Steel

The Steel corporation's gross receipts (STEEL, March 14, page 16) in 1931 were $729,377,468, compared with $796,894,299 in 1913, a relatively small loss. However, its net earnings, $46,483,999 last year, were little more than one-third the net earnings, $137,121,844, for 1913—the explanation for this great disparity being higher costs and low prices.

The importance of taxes may be gaged by averaging the Steel corporation's payments with its output of rolled and finished steel for sale, which yields a figure of $4.62 tax per net ton. This, no doubt, exceeds the actual figure, because it includes some operations, such as cement manufacture, not properly chargeable to steel manufacture.

The great bulk of the taxes, however, covers the various steps from the production of raw materials to the sale of finished steel. The tax on iron ore mined in Minnesota alone was more than 50 cents a ton.

A comparison with $1.07 tax per net ton of finished steel, similarly determined for 1913, indicates an increase of 331 per cent. This is all the more significant when it is noted that the Steel corporation's output of finished steel last year was 42 per cent less than in the prewar year.

It suggests the necessity for obtaining tonnage to spread out the tax, but even with tonnage in 1929 more than double that of 1931 the tax per ton in that year was $3.59. It has been well above $3 a ton in the past ten years.

Of all factors directly affecting the cost of steel, taxes show the greatest advance. Compared with its tax expenditures in 1913—$13,225,882—the Steel corporation's bill in 1931 was up 151 per cent.

Not even the Steel corporation's payroll, though eight times the size of its taxroll, can approach this degree of expansion, as in 1931 the payroll was only 29 per cent higher than in 1913. Going back beyond the abnormalities of 1931, the contrast becomes more glaring, for the payroll in the banner year 1929 was only 103 per cent above 1913, while the tax bill was up 315 per cent.

The average amount paid in wages and salaries per employe per day by the Steel corporation last year was 102 per cent more than in 1913. Because production of finished steel was reduced relatively more than the payroll, the unit cost advanced. But even so, this unit cost was only about 120 per cent above 1913.

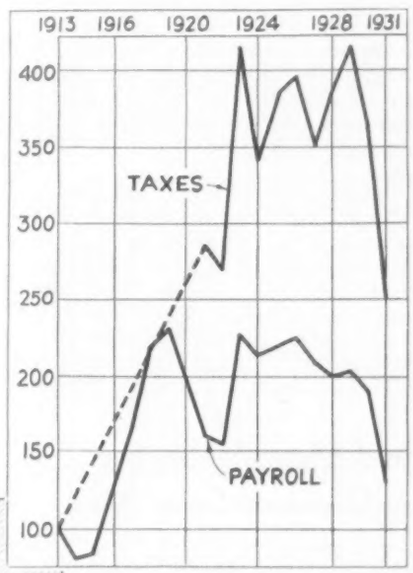
The nearest approach to this rise in taxes that can be found in the list of major steel costs is the increase in general freight rates, which last year, before the interstate commerce commission approved higher rates for iron and steel products, were approximately 150 per cent above 1913. The rates had remained at the same level since 1926; at their peak in 1922 they were 165 per cent higher than in 1913.

In contrast with the high levels of costs, topped by taxes, STEEL's iron and steel price composite for 1931 was only 18 per cent above 1913.

Income Tax Almost Vanishes

One effect of this abnormal position of costs, production and prices, was to almost wipe out the Steel corporation's federal income tax. In 1929 it paid $17,232,624 federal income tax; in 1931, only $80,000.

Income tax, being flexible, shows the greatest variation from year to year, a gage of business prosperity. But the majority of other taxes, forming by far the largest share of the total tax burden, represent an imponderable mass of expense, piled up in many instances with little



TREND of United States Steel Corp.'s taxes and payrolls, with 1913 as base. Tax indexes for years 1914 to 1920 omitted because of war-time factors. The drop in the tax trend line for 1930 and 1931 is due principally to reduced income; federal income tax in 1931 amounting only to $80,000, compared with $17,232,624 in 1929

thought in advance as to how the turn of business might affect the public's ability to pay.

There are in certain states, in addition to state income taxes, levies which fluctuate with business and industrial activities, such as the occupation tax on iron ore in Minnesota. These account largely for the fact that the Steel corporation's taxes, aside from federal income, dropped from $37,739,322 in 1929 to $33,162,707 in 1931.

The loss here, chiefly to the states and municipalities, was only $4,576,615, whereas the loss to the federal government, as represented by the difference between the income tax of 1929 and 1931, was $17,152,624.

The Steel corporation's state and all other taxes, except federal income, in 1931 were two and one-half times as much as all its taxes, including federal income, in 1913.

Here's Where Taxes Go; State, Local Outlays Up

Cost of government in the United States is steadily rising, with state and local expenditures far outrunning federal, according to the National Industrial Conference board, New York.

In the fiscal year ended in 1929 the combined expenditures reached $13,048,000,000, equal to $107.37 per capita, compared with $105.20 per capita in the preceding year. With four to a family, the 1929 expenditures were equal to $429.48 per family, about $1.50 for every working day.

Federal expenditures, amounting to $3,932,000,000, constituted 30.1 per cent of the total; state government expenditures, $1,990,000,000, or 15.3 per cent of the total; and local expenditures, $7,126,000,000, 54.6 per cent. Local and state government figures were higher than in 1928, and federal expenses lower.

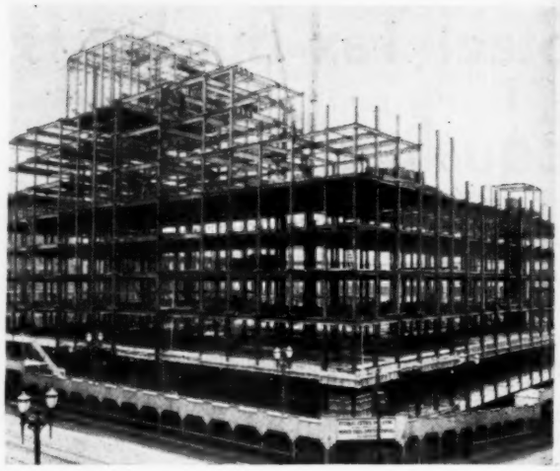
Hold Memorial Service For Deceased Scrap Men

An unusual feature of the annual convention, Institute of Scrap Iron and Steel Inc. at Washington, March 8-10, was a memorial service conducted by Benjamin Schwartz, director-general, in memory of the following members of the institute who died recently: Morris Speer, Cleveland; J. H. Turivas, Chicago; John W. Smith, San Francisco; Jacob Lanski, Chicago, and N. H. Shields, Cincinnati.

In addition to the directors noted as elected for a 3-year term in the March 14 issue of STEEL, Frank Parker of Chicago also is on the board. The following were elected to the board to fill unexpired terms: Fred Wimmer, Pittsburgh; Joseph Paper, St. Paul; and H. Cohen, Chelsea, Mass.

The director-general's cup awarded annually to the outstanding chapter of the institute was won by the New Jersey chapter, with honorable mention to the Cincinnati chapter.

THE 2700 tons of structural steel for this 9-story federal office building in Seattle was erected from Dec. 15 to Feb. 1, excluding Sundays and holidays, by the Isaacson Iron Works, Seattle. It is one of the many government buildings being erected in various cities for the emergency relief of unemployment



What's Happening In Business World

LUOSSAVAARA Kurunavaara, subsidiary of the Grangesbeerg Co., of Sweden, largest producer of iron ore in Europe, is increasing its capital 30,000,000 kronen to 111,000,000 kronen, half of which will be subscribed by the Swedish government and half by the company. A kronen now is worth 20 cents.

□ □ □

George A. Fuller Co. is placing orders for stainless steel for the Philadelphia Savings Fund building, Philadelphia.

□ □ □

American Leather Belting association, New York, has established specifications for selling leather belting by thickness instead of weight. Five classifications have been set up, and the average of 20 coils is to govern. The new tolerance limit is 2/64-inch.

□ □ □

Milwaukee industries have pledged $50,000 a year for 5 years for establishment of a scientific industrial reference library in connection with the public library system. The Engineers' Society of Milwaukee has long been working on such a plan.

□ □ □

A vessel man at Cleveland has bet a suit of clothes that not over 14,000,000 tons of Lake Superior iron ore will be brought down in 1932. The movement in 1931 was 23,500,000 tons. Not since 1897, when the total was 12,473,000 tons, has the lake movement fallen below 14,000,000 tons. Another Cleveland interest estimates 1932 shipments at about 20,000,000 tons.

100,000,000 Tons a Year

THIS country will see the day when 100,000,000 tons of steel will be produced in a year, declared Charles M. Schwab, chairman of the Bethlehem Steel Corp. and president of the American Iron and Steel institute, in addressing the Waste Material Dealers' association in New York recently. Mr. Schwab was optimistic concerning current business and said iron and steel is a barometer of general conditions.

Confident of Pickup, Weir Informs Stockholders

Although the new Great Lakes Steel Corp. division of National Steel Corp. was not entirely completed until late in 1931 and operations in all departments were on a small scale, proper depreciation charges were started on July 1 and continued from that date, Ernest T. Weir, chairman of National Steel, stated in his recent letter to stockholders.

Commenting on inventories, Mr. Weir pointed out that the management has never had a shortage occur on account of price or quantity since Weirton Steel Co. first started operations in 1906.

"Our plan has been to operate as fully as incoming orders would allow, thus furnishing as much employment as possible," he added.

"Cash could be materially increased at any time we wished by reducing inventories, which could be accomplished without in any wise affecting the efficiency of our operations, but

as we have ample cash to carry on our business, this would only result in larger bank balances, and it is the opinion of the management that more profit can be made from the inventory.

"While business has as yet shown no improvement, we are confident it will begin to mend some time prior to July 1 as a result of the constructive legislation recently passed in Washington, and also the thoroughly liquidated state of trade."

Steel Employment and Payrolls Down in January

Washington—Employment in iron and steel plants in January decreased 0.9 per cent from December, and payrolls dropped 11.3 per cent, according to reports to the bureau of labor statistics. Employment in identical establishments in January was down 16.4 per cent from January, 1931, and payrolls were off 44 per cent.

Employment and payrolls in structural steelwork and cast iron pipe plants in January also were lower than in December.

Inland Blast a Record

Inland Lime & Stone Co., subsidiary of Inland Steel Co., Chicago, set off a 441,000-pound dynamite blast at the Inland company's limestone quarries at Manistique, Mich., March 16, to dislodge stone for shipment to the Inland blast furnaces this season. This is described as the largest commercial blast on record, and it was divided into some 5000 charges, touched off simultaneously.

Solid Steel Fence for Fair

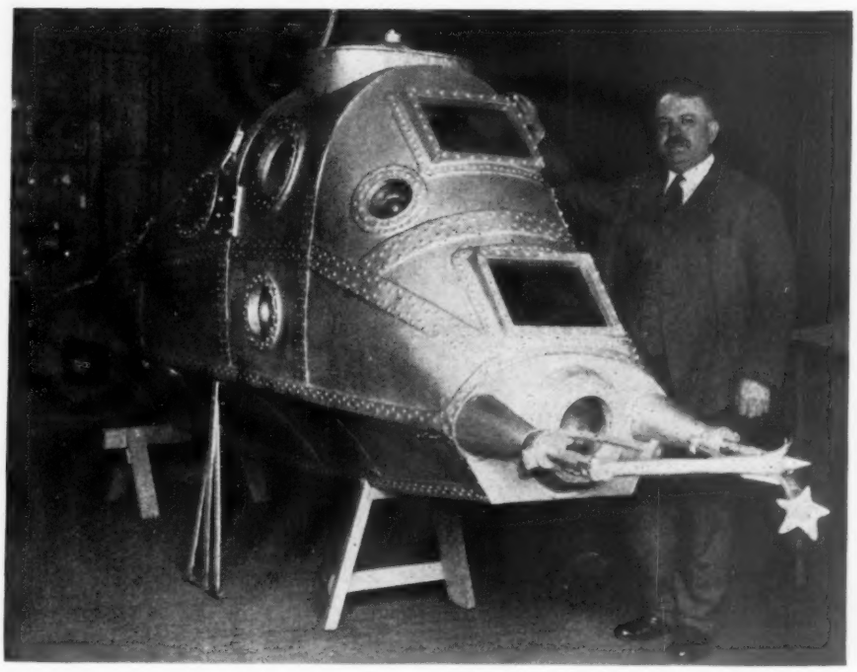
A SOLID steel fence 2½ miles in length, 9 feet high, ornamented with 20 foot flagpoles at 100-foot intervals, will inclose part of the grounds for the Century of Progress exposition to be held at Chicago in 1933. Work is to start this spring.

Sheet metal will be used in 6-inch strips either vertical and corrugated, or horizontal. White, silver, gray and orange, this fence will be painted, with silver predominating. An additional mile of this fence, claimed to be the first of its kind and absolutely peephole proof, will be erected later.

Metal Trades Body Meets In New York, April 20

National Metal Trades association, Chicago, will hold its 34th annual meeting at the Hotel Commodore, New York, April 20, with principal subjects including Labor Management in the Future, Destiny of Our Major Industries, Status of Credit and Recent Financial Developments, Unemployment Insurance, Significance of the Sino-Japanese Conflict, Recent Developments in Rackets and Radicalism, and Recent Legislation and Legislative Tendencies.

The annual meeting of the administrative council and of the branch secretaries will be held the day prior to this general meeting. Jacob D. Cox Jr., Cleveland Twist Drill Co., Cleveland, is a nominee for the presidency, now held by J. D. Benedict, Landis Tool Co., Waynesboro, Pa., who has served two terms.



Wide World Photo

STEEL CLAWS TO RECLAIM SUNKEN TREASURE: Ten years' savings and 3 years' work by Capt. Emil Kulik, Brooklyn, N. Y., are in this bobsled diving bell, engineered to descend to 800 feet, then crawl on the ocean floor at 2 miles per hour. Pedals, as on an automobile, regulate the compressed air which motivates the bell. Captain Kulik is shown above

The Business Week In Washington

OPPOSITION to the 2¼ per cent sales tax included in the revenue bill introduced in the house March 7 has reached surprising proportions in both parties, based chiefly upon the fear it will stifle business in the recovery period. Leaders of both parties, however, are sanguine that the measure will pass, for one reason because the necessity of balancing the budget becomes more apparent as income tax returns decline, also, the opposition lacks an alternative. Exemption of more food products has been agreed upon.

□ □ □

The house voted March 18 to raise the corporation tax from 12 per cent to 13, and to make the maximum income surtax 65 per cent.

□ □ □

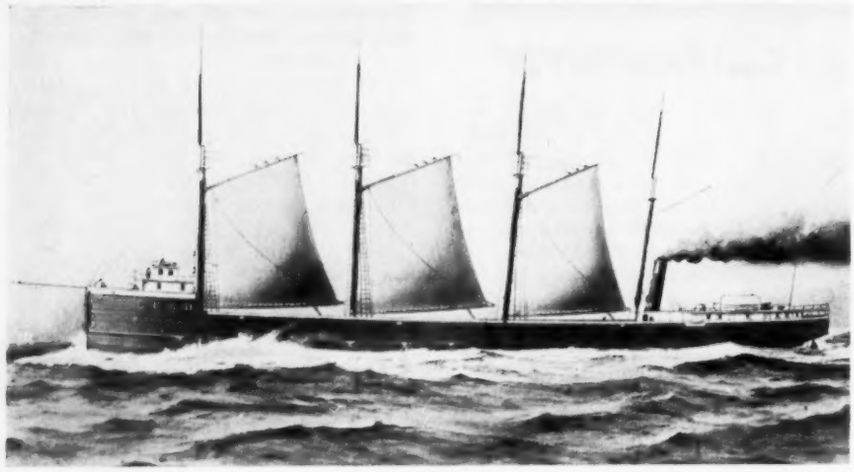
Led by Senator Oddie, of Nevada, foe of Russian manganese, a delegation including 10 senators, 26 representatives and representatives of 100 organizations requested of Secretary of the Treasury Mills March 15 that he place an embargo on all Russian imports on the ground the soviet system is one of forced labor. Secretary Mills responded that under existing laws this cannot be done, whereupon Russia's opponents declared their intention of seeking a law making such an embargo mandatory.

Australia Lifts Embargo

Toronto, Ont.—Australian government has lifted the embargo of April, 1930, on many imports, including barbed wire and farm implements. Canadian manufacturers expect to benefit by provisions of the trade agreement between Canada and Australia, giving tariff preferences.

Exhibit Mill Scenes

New York—Paintings of steel mills and steel workers by Garrit A. Beneker have been placed on exhibit at the Museum of Science and Industry, 220 East Forty-second street. Mr. Beneker was at one time associated with a well-known steel mill.



Photo, Courtesy George M. Steinbrenner, Cleveland

FORERUNNER OF MODERN STEEL LAKE FREIGHTERS: Steamer ONOKO, *launched 50 years ago. This vessel remained in service 33 years, ten years after ships twice her length and triple her capacity had been developed*

Steel on Great Lakes: A Half Century of Development

THIS year marks the lapse of a half century since the first iron freighter appeared on the Great Lakes. The vessel, ONOKO, foundered in Lake Superior in 1915, after 33 years of profitable service which extended over the period of the most intensive maritime and industrial development.

When the ONOKO was launched in 1882 at the Globe Iron Works, Cleveland, only 20,000,000 gross tons of iron ore had been shipped from Michigan and Minnesota. It was ten years before shipments began from the Mesabi range. Wooden ships, the majority propelled with sails, and loaded and unloaded by means of wheelbarrows, or crude mechanical devices, were struggling with the growing lake traffic. Yet the iron boat survived to the time when the Lake Superior district was disgorging ore at the rate of 50,000,000 tons a year and when a billion tons had been removed.

The ONOKO was the true prototype of the modern steel freighter. It was 302½ feet over all, 39-foot beam, 25-foot depth of hold, with capacity for 3000 tons. It spurred on the invention of newer and faster steel dock equipment. Within four years came the first all-steel vessel.

Greatest Development in 25 Years

Development of these vessels as regards length and capacity ran a course similar to shipments of iron ore, showing the greatest expansion within 25 years, and then a slower increase. By 1905—that is, 23 years after the ONOKO was launched—steel vessels had been lengthened to 600 feet, with capacity for 10,000 tons. In the same period yearly iron ore shipments advanced from 2,500,000 tons to 34,000,000.

In the past 27 years the length of vessels has been increased only 38 feet. Interlake Steamship Co.'s HARRY COULBY, the largest engaged in carrying iron ore, is 630 feet, 9 inches overall, with capacity for 14,000 tons. Ore shipments have mounted from 34,000,000 tons to a recent average of 51,000,000.

In routine loading speed no new record has been set since the steamer D. G. KERR was loaded in 30 minutes with 12,689 tons at Duluth in 1919, though in a special test in 1921 the same ship was loaded with practically the same tonnage in 16½ minutes. In unloading, the fastest time was made at Conneaut, O., in 1929, when 12,000 tons of ore was removed from the steamer HENRY H. ROGERS in two hours, 25 minutes.

Prices Lower Than in 1882

To the modern freighter—equipped with engines of less horsepower than the 38-foot international speed boat champion— must be ascribed much of the low cost of iron and steel today. Vessel freight charges from upper lake ports are less than half those 50 years ago. They are approximately one-tenth of the rail freight, mile for mile. The grade of old range bessemer ore which in 1882 sold at $9 to $10 delivered at lower lake port, now is $4.80; nonbessemer being reduced in similar proportion. Gray forge iron, advertised as "made entirely from lake ore" averaged $26.14, Pittsburgh, in 1882. Recently the price has been $15.50.

A billion and a half tons of ore has been shipped since the ONOKO was launched. Recently a group of Duluth engineers estimated the good grades of ore remaining in Minnesota at 1,300,000,000. In addition, the potential, or possible, reserves in that state were estimated by them at 42,000,000,000 tons—one-fourth the world's potential total. It is evident from these and other estimates that steel freighters will be carrying Lake Superior iron ore when the ONOKO is forgotten.

Interlake Steamship Co.'s HARRY COULBY, *modern steel freighter with nearly three times the* ONOKO'S *carrying capacity. In 50 years since* ONOKO *was built lake iron ore freight rates and ore prices have been reduced one-half*

Industrial Men in the Day's News

Horace Hammond, President, Alabama By-Products Corp., Birmingham, Ala.

HE was one of the organizers of the Coosa Pipe & Foundry Co., also the Gadsen Pipe & Fittings Co.

DURING his business career in the Birmingham, Ala., district, he has been active in the coke and coal business.

ASSOCIATED with the late Morris Bush for the past 25 years, he succeeds him in the presidency of the Alabama By-Products Corp.

HORACE HAMMOND, who as noted in STEEL for Feb. 22 was elected president of the Alabama By-Products Corp., Birmingham, Ala., has lived in the atmosphere of Birmingham industry practically all of his life. For more than the past 25 years he has been associated with the late Morris W. Bush, whom he succeeds in the presidency of the Alabama Corp.

When he was 16, Mr. Hammond served as a clerk in the probate court of Shelby county, Alabama. Four years later he went to Birmingham and became associated with the late Col. T. G. Bush in his many iron, coke, coal and railroad activities. Mr. Hammond served as secretary and a director of the Mobile & Birmingham railroad for several years at the time it was leased to the Southern Railway.

In 1905 he was appointed assistant to the president and general sales manager for the Alabama Consolidated Coal & Iron Co. and the Shelby Iron Co. Two years later he, with M. W. Bush, organized the Coosa Pipe & Foundry Co., and the Gadsden Pipe & Fittings Co. was begun under their direction shortly afterward.

In January, 1907, Mr. Hammond, with William M. Byrd, formed the Hammond-Byrd Iron Co., and in 1924 he acquired Mr. Byrd's interest. He has continued the company under the name of the Hammond Iron Co., as a broker of coal, coke, pig iron and pipe.

During all of his business career, Mr. Hammond has been actively engaged in the coke and coal business, having been instrumental in forming the Imperial Coal & Coke Co. in 1905 and the Majestic Coal Co. in 1915. In 1918, with Morris W. Bush and Albert P. Bush, he organized the Birmingham Coke & By-Products Co., which in 1920 was merged with the Imperial Coal & Coke Co. and the Majestic Coal Co. under the name of the Alabama By-Products Corp.

In 1925 the latter company acquired the Pratt Consolidated Coal Co. and the Globe Coal Co., and now has the largest battery of coke ovens operating on a strictly commercial basis in the South. Coke is now distributed by the company into 31 states and exported to Canada, Mexico and Cuba.

W. J. Cook, head of the galvanizing departments of the Wheeling Steel Corp., on March 15 celebrated his fiftieth anniversary in that capacity. In 1882 he went to Wheeling from Chicago to undertake the installation and operation of a galvanizing shop for the Whitaker Iron Co., sheet manufacturer. During successive changes in the company, whereby the Wheeling Iron Co. was taken over by the Whitaker-Glessner Co., which also acquired the Burgess Iron & Steel Co., Portsmouth, O., later known as the Portsmouth Steel Co., and 12 years ago merged with others to form the Wheeling Steel Corp., Mr. Cook has continued in the same capacity in charge of galvanizing.

During his career, the first galvanizing shop in Wheeling has increased in capacity from 3500 tons to 350,000 tons and Mr. Cook shares with the Wheeling Steel Corp. the distinction of operating continuously for a half a century the only galvanizing shops installed as early as 1882.

□ □ □

William B. Cooley, formerly sales manager of the Hevi-Duty Electric Co., Milwaukee, is now engaged in sales activities in the continuous heat-treating division of the Surface Combustion Corp., Toledo, O. Mr. Cooley was graduated from Purdue university in 1917 in electrical engineerinng and has been associated with metal-working industries since 1918. Prior to his affiliation with the Hevi-Duty company he was connected with the Industrial Electric Furnace Co. and the Westinghouse Electric & Mfg. Co.

□ □ □

E. W. Morrell, for the past 11 years identified with the manufacturing and distribution departments of the National Radiator Corp., Johnstown, Pa., has been appointed purchasing agent.

□ □ □

D. D. Barnes, formerly sales manager of the Smith Engineering Works, Milwaukee, has joined the sales staff of the H. O. Penn Machinery Co.,

New York distributor for the Byers Machine Co., Ravenna, O.

□ □ □

Ralph Fink, formerly with the American Stove Co., Cleveland, has joined the laboratory force of Ferro Enamel Corp., Cleveland.

□ □ □

R. Vane Woods, formerly with the Pacific Car & Foundry Co., Seattle, has joined the Western Engineering Corp., Seattle, as structural engineer.

□ □ □

J. W. Hofius has succeeded M. A. Gustafson as manager of the Portland, Oreg., office of Hofius Steel & Equipment Co., Seattle.

□ □ □

E. J. Lees, who has been associated with Lees-Bradner Co., Cleveland manufacturer of gear making machinery, since its organization, has severed his connection with that company and is now affiliated with National Tool Co., Cleveland, as engineer.

□ □ □

Guy H. Billings, for the past 17 years purchasing agent for the Four Wheel Drive Auto Co., Clintonville, Wis., has been appointed assistant general manager. He will retain the title of purchasing agent in his new position.

□ □ □

W. G. Pearce, chairman of the executive committee, American Brake Shoe & Foundry Co., New York, has been elected a director of the Bucyrus-Erie Co., South Milwaukee, Wis., to succeed the late J. R. Terbell, who also was an official of the Brake Shoe company.

W. W. Coleman, president, and all other officers and directors were re-elected at the Bucyrus-Erie annual meeting.

□ □ □

Edward F. Niedecken, vice president of Hoffman & Billings Mfg. Co., Milwaukee, for the past 35 years, has been elected president to succeed the late Fred Hoffman. He was a member of the engineering staff of Filer & Stowell Co., Milwaukee, before joining the Hoffman company in 1894. Three years later he was elected vice president.

Fred Gezelschap has been elected vice president of the company, and Edward T. Hoffman secretary and treasurer.

□ □ □

George R. Casey has been elected vice president and general manager of the Treadwell Engineering Co., Easton, Pa., to succeed A. A. Neave, resigned. Mr. Casey has been connected with the Treadwell company for over 20 years, having worked in various departments. For the past five years he has been in charge of sales.

□ □ □

H. R. Audet, division manager for the past six months for General Motors Export Corp., New York, has been named Michigan manager for the Greenfield Tap & Die Corp., Greenfield, Mass. The major part of his business experience has been devoted to the manufacture and sale of precision screw thread cutting tools and gages. He was formerly with the New England Westinghouse Co., Springfield arsenal, and general manager of the Geometric Tool Co., New Haven, Conn.

□ □ □

E. T. Corbus, formerly first vice president of Edgar T. Wards Sons Co. at Pittsburgh, has been made president and treasurer of Uddeholm Co. of America Inc. with offices at 342 Madison avenue, New York, the American branch of a Swedish company specializing in the production of rods, billets, tool steel and hollow drill steel. Mr. Corbus was identified with the Ward company from 1923 until November, 1931, previously having been connected with the Columbia Steel & Shafting Co., Carnegie, Pa., and the Union Drawn Steel Co., Beaver Falls, Pa.

□ □ □

Archibold H. Ehle, formerly vice president in charge of sales for Baldwin Locomotive Works, Eddystone, Pa., has been appointed director of sales of the rail car division of the Edward G. Budd Mfg. Co., Philadelphia, which company has acquired the American rights to the Michelin pneumatic-tired rail car.

Mr. Ehle was educated at the Massachusetts Institute of Technology and in 1902 entered the service of the Baldwin Locomotive Works as an apprentice, serving in various capacities until he was appointed general sales manager in 1919. In 1926 he was elected vice president in charge of domestic sales, and later was put in charge of general sales, a position he occupied until his resignation late in 1931.

Obituaries

JOHN M. SELLERS, 66, president of the Sellers Mfg. Co., Chicago, railroad supplies, died March 13 in Downers Grove, Ill. A native of Keokuk, Iowa, Mr. Sellers became connected with Morris Sellers & Co., predecessor of the present company, which was founded by his father and in 1895 became vice president and general manager of Sellers Mfg Co. Since 1915 he had been president. He spent a number of years prospecting in the Lake Superior iron ore regions and helped to develop mining properties on the Mesabi range in 1894.

□ □ □

Lewis W. Hemp, 95, sheet metal manufacturer of St. Louis for 77 years, died recently in that city. He was born in Baltimore, went to St. Louis in 1855, and established Hemp & Co. in 1862.

□ □ □

Minor B. Stewart, 48, vice president and purchasing agent of the Hammond Iron Works, Warren, Pa., died recently at Warren.

□ □ □

Harold E. Horton, 51, one of the owners of the Chicago Aluminum Castings Co., Chicago, died March 15 at Riverside, Ill.

□ □ □

Walter W. Wessling, 44, for 28 years identified with the Kruse Hardware Co., Cincinnati, died at Cincinnati March 11. He was a director of the company.

□ □ □

Edward F. Ruehrwein, 77, partner in Moesta & Ruehrwein Co., manufacturers' agent for iron and steel castings, Cincinnati, died at Cincinnati March 10. He had been identified with the company for 25 years and was active in civic affairs.

□ □ □

George Nicholson, 62, vice president and assistant general manager, Vulcan Iron Works, Wilkes-Barre, Pa., died at Wilkes-Barre March 15. He became associated with the Vulcan company at 18 with his father and brother, Samuel T. Nicholson, who now is president. Mr. Nicholson was president of the Hanover Bank & Trust Co. and the Luzerne County Manufacturers' association. He was a member of the Machinery Club of New York and the Manufacturers' Club of Philadelphia.

Orders 3-Week Vacations

Western Electric Co., Chicago, which for several years has given its employes mass vacations each season, announces that the annual two-week vacation will be increased to three weeks this year. This action was taken in view of the decline in its business and the consequent necessity for spreading available work among the largest number of employes. All employes this year will receive the vacation with pay to which they are eligible, but the additional time will be without pay.

Navy Buys Wire March 22

New York---Bids close March 22 at bureau of supplies and accounts, navy department, Washington, on 99,840 feet 1/8-inch bright wire rope, not galvanized, for the bureau of ordnance, mine depot, Yorktown, Va. This rope will be used at plummet cords for mine anchors and consists of seven strands of seven wires each with a breaking strength of not less than 1550 pounds. Bids will be taken on wire only, and alternate for wire and reels.

MIRRORS of MOTORDOM

DETROIT

HUPP has provided a diversion to the Ford guessing contest by proving that there still is money in the United States and that it can be attracted by bargains.

Confronted with a slight delay in the production of bodies for part of its 1932 line—a situation which, incidentally, has now been remedied; its dealers having a carryover of the late 1931 models and the factory an inventory of various parts for these models, Hupp decided to move immediately this entire surplus.

Assembly of the factory surplus of 1931 materials and parts plus dealers' stocks supplied a total of about 2000 cars, which have been offered in the past three weeks in Philadelphia, Pittsburgh, Cleveland and Detroit, at reductions up to $1000 from list. The public's response to these bargains has been remarkable. On a recent Sunday, orders at Pittsburgh and Detroit each exceeded 100.

The net result is that Hupp factory has been cleared of all 1931 inventory except the usual stock of service parts, dealers have cleared their floors, and while dealers have not made much profit they have whittled down their overhead, put a number of new Hupps on the street and broadened their potential service business. Detroit accounts it a smart bit of merchandising.

Fords Only a Week Off

Something of this same reasoning is encouraging Henry Ford to put two new models on the market at this time and partially accounts for his delay. The public is expecting great things of the new Ford—a fact to which competing manufacturers can attest—and any delay is justified, in Mr. Ford's mind, by his painstaking attempt to check every part and detail.

Speculation concerning the introduction of the new Fords is now giving way to foreknowledge. Activity at Ford showrooms and at the main plant and the 35 branch assembly plants indicates that in a week or ten days the 9000 to 10,000 Ford dealers will have one each of the new four and the new eight. As in 1927, when Model A was brought out, dealers will make the first showing with "sample cars," plus photographs of the remainder of the line.

Plan Shows for New Jobs

In certain "key" cities it is possible that a special show will be held, in much the same manner that Model A was first displayed in December, 1927. It would be interesting if General Motors also decided to hold a show soon of its various lines, thereby giving a double stimulus to the retail market just as spring retail buying would normally develop.

These 20,000 sample new cars which Ford dealers will shortly display will practically be hand-made jobs and will not have been assembled in what could be termed regular production. The unbalanced releases of parts and materials, mentioned in this column over the past month, supply the material for this initial run of 20,000 to 25,000 units.

Last week more parts releases were distributed, running as high as 30,000 for one item. Deliveries were specified beginning April 1. This sets early April as the start of real volume assembly. Ford officials are confident that volume production can be achieved with fewer pains than in 1927, when welding was adopted on a large scale and much new equipment had to be installed.

It is conservative to estimate that 100,000 cars will be required to stock Ford dealers, considering that there will be two lines instead of one and taking into account some thousands of service outlets not accounted regular dealers. Presumably, the first buy of steel would be for dealers' stocks plus orders in hand. It is believed Ford will wipe the slate clean, consider this buy a brand new deal, and take fresh prices on materials, including steel.

Detroit is much less inclined to ascribe the Ford delay to a desire to await a better retail market and is convinced that Mr. Ford's personal efforts to perfect the new models are responsible. It is no small feat to build a four and an eight engine for the same chassis that will be in perfect balance.

In keeping with the times, and the quest for lower costs, a number of experiments with new materials and designs have been made and Mr. Ford, like the youth carrying the banner of "Excelsior," is relentless in his demand for lightweight and fewer parts.

Ford, like other automobile manufacturers, is unceasingly testing new materials and designs, one facet of his development work dealing with the substitution of alloy cast iron for steel forgings. It is understood that considerable work has been done in the Dearborn laboratories on a cast crankshaft, a cast camshaft and a one-piece cast tappet and valve, but it is not definitely known that such a radical departure is planned for the forthcoming models.

Test Alloy Castings

There is economy in the one-piece tappet and valve but the clearances required of a quiet operating valve are said not to be compatible with the expansion of cast iron or steel when operated at the high temperatures encountered in internal combustion engines.

At least three manufacturers of automobiles and two manufacturers of parts have been engaged in noteworthy development work on cast crankshafts and camshafts. A camshaft of the following analysis was recently run 500 consecutive hours

in an automobile engine developing more than 100 horsepower with the throttle wide open: Total carbon, 3.15; graphitic carbon, 2.61; combined carbon 0.54; manganese, 0.48; silicon, 2.34; sulphur, 0.066; phosphorus, 0.11; molybdenum, 2.25; nickel, 1.70 and chrome, 0.08. The only appreciable wear—and it was not great—was at the gear operating the oil pump shaft.

Cast crankshafts have been put in experimental automobile engines and found to have this merit: While the tensile strength of 70,000 to 80,000 pounds is about 10,000 pounds below that of a normalized steel forging, the elastic limit is higher than in steel and approximates its own tensile strength, thus giving the cast crankshaft great fatigue value.

In conjunction with babbitt or bronze it is claimed that the cast crankshaft makes an unusually good bearing. Such crankshafts have been made in an electric furnace with cold melt, or in a cupola and electric furnace by the duplex method, or in an air furnace.

March Production Slumping

Ford volume production in March now being out of the question it becomes necessary to revise the estimate of production for this month. While Ford has gained somewhat over the beginning of March, other manufacturers as a whole have curtailed, so that March apparently will do well to approximate the 126,000 units of January and the estimated 118,000 of February.

The first quarter of 1932 thus probably will have a total output of 365,000 cars and trucks, which is little more than half of the 668,193 units credited to the first quarter of 1931.

General Motors lines have not been exempt from the virtual paralysis which has gripped the automobile industry since Feb. 11, when Mr. Ford first officially confirmed reports of his new lines. The Ternstedt Mfg. Co., the General Motors subsidiary manufacturing automobile hardware and bright parts, closed March 16 at least until March 28.

Buick Says No Change

While reports still are current in Detroit that Fisher Body is about to start on certain body changes for Buick, it is stated officially by the Buick company that it does not propose any such change at this time. The factory states: "Buick presented its 1932 line on Nov. 14 last and announced that presentation of new models would be on a calendar year basis and there is no reason at this time to make any change in this announcement." Continuation of the Wizard control feature is also affirmed.

It may be noteworthy of the times that both Buick and Parkard are making a special drive on the lowest priced cars in their lines. Buick is stressing its 3500-pound sedan selling at $995, factory, a price which figures out to 28½ cents a pound.

Two new automobiles are said to be just around the corner. One is the new series by Reo to sell at less than $1000 and the other is the revision of the Plymouth line by Chrysler. Plymouth has taken the trimmings off its 2-door and 4-door sedan without any change in the chassis, appropriately describing these jobs as "thrift" models—the name being somewhat reminiscent of Graham's Prosperity Six.

Chrysler announced March 18 that it would show its new Plymouth models the day the new Fords are displayed.

Financial News of Steel Industry

STEEL CO. of Canada, Ltd., Hamilton, Ont., for 1931, shows consolidated net income of $598,550 after taxes, interest, depreciation equivalent after 7 per cent preferred dividends, to 31 cents a share on the common stock. This compares with net income in 1930 of $1,741,282 equivalent under the participating provisions of the shares to $2.42 a share on the combined 259,852 shares (par $25) of 7 per cent preferred and 460,000 common shares.

□ □ □

Spang, Chalfant & Co., Pittsburgh, reports net loss for 1931 of $278,008, compared with net profit in 1930 of $2,868,769, or $2.76 a common share.

□ □ □

Interlake Steamship Co., Cleveland, has declared a dividend of 25 cents, payable April 1 to record March 17. The dividend rate in the preceding quarter was 50 cents a share.

□ □ □

Acme Steel Co., Chicago, placed its stock on a $1.20 annual basis by declaring 30 cents quarterly. In the preceding quarter, 40 cents a share was paid. Last October 50 cents was paid, and before that the stock paid 62½ cents quarterly.

□ □ □

United States Pipe & Foundry Co., Burlington, N. J., reports net income of $1,012,216 for 1931 after depreciation. After payment of preferred and common dividends the company reports net loss of $907,478.

□ □ □

Cambria Iron Co., Johnstown, Pa., controlled by Bethlehem Steel Corp., Bethlehem, Pa., reports the amount expended for new property in 1931 totaled $1,707,061 and total expenditures for new properties and improvements under the lease from Dec. 1, 1898, to Dec. 31, 1931, $107,753,216. At the annual stockholders meeting directors were re-elected. Officers also were re-elected.

New Eastern Freight Rates Seen Aid to Pittsburgh

Pittsburgh steel producers will benefit on eastern shipments of less carload lots of steel products as results of the uniform rate basis adopted by railroads in official classification territory, effective May 2. This change will eliminate discrepancies in rates from Pittsburgh to eastern consuming points, compared with rates from Bethlehem, Johnstown, Coatesville, Steelton and other Pennsylvania steel producing centers.

The agreement provides for rates of 40 per cent of first class rates on shipments of less carload lots, while the present classification basis of fourth class is equivalent to 50 per cent of first class rates. One example of this change will reduce the disadvantage in freight from Pittsburgh to New York, compared with Johnstown to New York, from 14.5 cents to 4 cents. The spread compared with the rate from Bethlehem and Pittsburgh to New York will be cut from 32.5 cents to 19 cents per 100 pounds.

Makers Will Try To Hold Farm Implement Prices

Chicago—Farm implement manufacturers are not likely to put through any further price reductions of major importance, it is stated in the industry here. Views are that factory prices of farm implements are fairly well stabilized for this year.

Requests from dealers and buyers for a scaling-down of power farming costs have lessened considerably in the last few months, it is stated, and manufacturers have resumed a firmer tone.

Stabilized prices, an increase in farm income through higher prices for live stock, and a letting-up in deflation in rural sections are cited as among the encouraging factors contributing to the farm equipment outlook.

Insert Sales Tax Clause

New York—Steel mills are inserting in all contracts a clause providing for the addition of the proposed sales tax, should it become operative, to the specified price. Inasmuch as the tax would apply only to finished products it is believed the bulk of production of the mills will escape a direct tax.

Here and There in Industry

LANCASTER Iron Works Inc. announces acquisition of the coke dry quenching business as sole licensee for the United States and Canada under the basic patents of Sulzer Bros., Winterthur, Switzerland. This business formerly was handled by the Dry Quenching Equipment Corp., a subsidiary of International Combustion Engineering Corp. The engineering and manufacturing facilities of Lancaster Iron Works Inc., Lancaster, Pa., are well suited to this new work. The new department will be under the direct management of W. O. Renkin, formerly with the Dry Quenching Equipment Corp. in complete charge of its work in this country for several years. The new department will be located at the Lancaster company's New York office, 370 Lexington avenue.

□ □ □

American Car & Foundry Co., New York, has moved its Cleveland offices from 2402 Terminal Tower to 2411, same building.

□ □ □

Mid-State Body Corp., Waterloo, N. Y., builder of automotive bodies, is installing machinery to make possible substitution of steel for wood in various body parts.

□ □ □

Carey Machine & Supply Co., 119 East Lombard street, Baltimore, has been appointed distributor by Gears & Forgings Inc., Cleveland, for its speed reducers and flexible couplings.

□ □ □

Gregg Co. Ltd., Hackensask, N. J., manufacturer of railroad freight cars has leased the thirty-fourth floor at 19 Rector street, New York, for its New York sales and export offices and will remove there from 67 Wall street.

□ □ □

B-B Nut Co., Eighth street and Columbia avenue, Philadelphia, has acquired the sole license for United States, Canada and Mexico of all patents of the Safety Nut Corp., Philadelphia.

□ □ □

American Cabinet & Fixture Co., a corporation organized in Chicago, has leased 18,000 square feet of working space at 1818 West Austin avenue, Chicago, for manufacturing purposes.

□ □ □

Horsburgh & Scott Co., 5114 Hamilton avenue, Cleveland, has opened a district sales office at 844 Rush street, Chicago, for sale of its gears, speed reducers and similar products. The office will be served by H. G. Davis, C. R. Morrison and R. W. Hoyt.

□ □ □

Klein-Farris Co., 310 Congress street, Boston, has been organized by Herbert H. Klein, formerly with the Pennsylvania Foundry Supply Co., and Horace D. Farris, formerly with the Chas. A. Krause Milling Co., to conduct a general business in foundry supply.

□ □ □

Winston Construction Co., Minneapolis, plans to develop manganese deposits at Chamberlain, S. Dak., erecting a refinery at Sioux Falls, S. Dak. In the past 6 months more than 1500 tons of ore has been reduced.

□ □ □

Alco Products Co., Dunkirk N. Y., subsidiary of the American Locomotive Co., 30 Church street, New York, has acquired the business and essential personnel of the Jackson Engineering Corp., Tulsa, Okla., which specializes in design and manufacture of plants and equipment for the oil and gas industries.

□ □ □

Nobliett-Sparks Industries Inc., Indianapolis, recently added exhaust mufflers to its automotive accessory products and has signed contracts with three important automobile builders for production. The company expects, on the basis of business already obtained, production in mufflers to approximate 50,000 units this year.

□ □ □

C. & S. Specialty Mfg. Co., 1519 East Thirty-ninth street, Cleveland, has started production of a combination valve for radiators, providing individual radiator heat control on single-pipe steam heating systems. A. E. Shepard is president and E. C. Credicott is secretary. A plant has been equipped in leased quarters at the above address.

□ □ □

Northern Engineering Works, 210 Chene street, Detroit, has established a commercial welding department for the production of steel frames, bases, gear housings, casings, jigs, fixtures, fabricated structures, standard and special machinery parts. It also will do machine torch cutting of intricate shapes. The department grew out of the experience gained in extensive welding work in the manufacture of cranes and hoists. Engineering, designing and layout service is available in connection with the welding.

□ □ □

General American Tank Car Corp., Chicago, has completed arrangements whereby the Canadian manufacturing interests of the company are to be merged with those of the Canadian Car & Foundry Co. A new corporation to be called the Canadian General Transit Co. will be formed immediately. Officials of the General American company state they expect the new arrangement will result in increased business with a more convenient handling of its tank car traffic in Canada.

□ □ □

Brown Tool Co., 10465 Carnegie avenue, Cleveland, has concluded arrangements with the Barber-Colman Co., Rockford, Ill., to distribute the latter's temperature control equipment in Ohio counties north of and including Paulding, Putnam, Hancock, Wyandot, Crawford, Richland, Ashland, Wayne, Stark and Mahoning. The equipment includes electrically-operated devices for automatic maintenance of uniform temperature in connection with any type of heating, ventilating or air-conditioning system.

□ □ □

O. D. Conover, foundry and steel plant engineer, has established offices at 1740 East Twelfth street, Cleveland, as consulting engineer, specializing in development, layout and design of industrial plants and foundries. For the past three years he has been vice president of the Foundry Equipment Co., Cleveland; for ten years preceding he was foundry specialist and assistant chief engineer for the Austin Co., Cleveland. Four years previous to his connection with the Austin Co. he was vice president and chief engineer of the T. W. Price Engineering Co., New York and Chicago, specializing in design and construction of steel plants and foundries.

□ □ □

Arthur G. McKee & Co., Cleveland, engineers and contractors, A. G. McKee president, received gratifying reports at its annual meeting in February. Orders since Jan. 1 have been in satisfactory volume. The new research department established in 1931 is operating satisfactorily and at least one new equipment of major importance will be introduced shortly. Designing for the steelworks the company is supervising in Soviet Russia is nearly completed, but supervising construction continues. Less than half the 1931 profits were from Russian work, earnings from domestic and other foreign business being sufficient for regular dividends. Directors elected included Arthur G. McKee, R. E. Baker, H. E. Widell, L. B. Weidlein and J. D. Williams. Officers of the company were re-elected.

EDITORIAL

Industry Has Big Stake in Budget Balancing

BALANCING the budget is one of the most important problems now facing the American public. Individuals and corporations have taken drastic measures to reconcile outgo and income, and while considerable adjustment still is necessary, they are making gratifying progress. Unfortunately this is not true of federal, state and local governments. Public officials have been slow to recognize the danger of continuing to spend more than the amount that is being received.

In most cases balancing the budget entails drastic reductions in expenditures and large increases in revenue. The importance of the former is emphasized clearly by figures just issued by the National Industrial Conference board showing that government expenses—national, state and local—for the fiscal year ending in 1929 totaled 13 billion dollars. This sum covers the aggregate expenditures of all governmental authorities in the United States, including capital outlay and debt retirements. It is divided as follows:

Government	Expenditures 1928	Expenditures 1929	Per Cent 1928	Per Cent 1929
Federal	$3,970,000,000	$3,932,000,000	31.5	30.1
State	1,826,000,000	1,990,000,000	14.5	15.3
Local	6,813,000,000	7,126,000,000	54.0	54.6
Total	$12,609,000,000	$13,048,000,000	100.0	100.0

Government Expenses Amount To $1.50 Per Day Per Family

The total represents a per capita burden of $107.37. Assuming that the average family consists of four persons, government expenses in the fiscal year of 1929 were at the rate of $429.48 per family, or about $1.50 per working day. In some cities where local expenditures are especially heavy it is estimated that the average per family for all government purposes is as high as $2 per normal working day.

Federal expenditures were lower in 1929 than in 1928, but those of state and local governments were higher. The principal factors in the cost of local government are increased outlays for education, highways and debt service. Cost of highways is the largest item in state expenditures. Education ranks second in its demands upon the state purse.

A measure of the burden of state and local government costs borne by industry can be gained from the article on page 17 of this issue. The United States Steel Corp. in 1931 paid the equivalent of $4.62 per ton on its output of 7,162,359 tons of rolled and finished steel products. Even in the prosperous year of 1929 the figure was $3.59 per ton. However, the significant point in regard to 1931 taxes is that an unusually high proportion of the corporation's tax money went to state and local government treasuries, inasmuch as the federal income tax levy amounted to only $80,000.

Industry Should Press for Economy in State and Local Government

The experience of other producing companies and manufacturers is similar to that of the Steel corporation. Therefore it is clear that the first focal point for the scrutiny of public expenses is in the local governments. As large taxpayers, manufacturers have a right—in fact it is their duty—to exert their influence upon local public officials to put an end to the waste of public funds. Only in this way can they atone for their indifference to public affairs in times of plenty.

Manufacturers also have a responsibility in connection with pending tax legislation. At times there has been a tendency to look upon the enactment of tax bills as a political game in which every faction tries to throw the burden on the other fellow. What we need now is a stern realization that federal revenues must be increased, that the emergency may necessitate measures that would not be countenanced in normal times, and that prolonged bickering induced by undue selfishness may easily lead to more serious difficulties.

An eminent authority, writing from London, states that things in England took a decided turn for the better when the British people decided on the heroic course of taxing themselves heavily to balance the budget. America can take a leaf from England's book: Cut expenses to the bone; and then raise taxes to balance the budget.

Do not think of a balanced federal budget only in terms of taxes you will pay; consider also what it means to you in terms of the future security of your business.

THE BUSINESS TREND

Belated Adjustments Dull Effect of Easier Credit

BUSINESS still is at the mercy of strong conflicting forces. Commercial failures are fewer, credit is somewhat easier, bank failures are diminishing, less money is being hoarded and in general the financial situation is much better than it was a month ago. On the other hand many belated adjustments still are being made. Another flurry of wage cutting is in progress. Here and there government payrolls are being slashed right and left. These are considered to be necessary remedial acts, but unfortunately they come at a time when the relief funds in many sections of the country are almost at the point of exhaustion.

Therefore it is possible that we may witness in the next few weeks a spirited race between the forces of credit liberalization and of depleted purchasing power on the part of the public. In other words, will the influence of easier credit seep through the economic structure of the country in time to offset the dire effects of continued wage cutting, declining dividend payments, etc.?

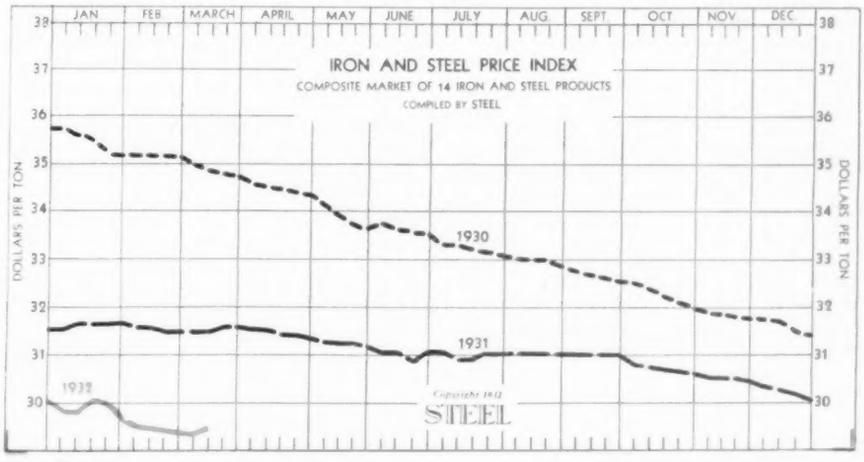
In the meantime industrial activity continues unchanged. Car loadings increased in the week ending March 5, but the upturn from the preceding holiday week was not sufficient to indicate an improvement in the trend of freight volume. Ford's slow start and the continued absence of railroad purchases combine to keep steelworks operations near the 25 per cent level.

Recent events have had little effect on commodity prices. Bradstreet's index of wholesale prices of 106 commodities on March 1 stood at $7.31. This is the lowest mark touched by this sensitive index since August, 1899. When one considers that the all-time low was established in 1896, it is apparent that deflation in commodities is running far ahead of liquidation in wages, rent, light, transportation and many other essentials.

Output of Electricity Gains in Second Consecutive Week

One of the cheerful indicators of business is the production of electricity. Electric output for the week ending March 12 was up slightly from the preceding week. This was the second consecutive weekly gain after a brief period of recession.

Exports in February were up from January levels for the first time since 1916 but the significance of this is dimmed by the fact that cotton and other merchandise was hastily shipped in February to anticipate the new British tariff.



1932	
Mar. 12	$29.55
Mar. 5	29.53
Feb. 27	$29.53
Feb. 20	29.53
Feb. 13	29.57
Feb. 6	29.60

1931	
Mar. 11	$31.61
Mar. 4	31.61
Feb. 25	$31.61
Feb. 18	31.61
Feb. 11	31.69
Feb. 4	31.69

Malleable Castings Make Best Total Since June

Malleable castings production in January rose from the low levels of preceding months and registered the best percentage of activity since June, 1931. The revised figures for 1931 and preliminary figures for January, 1932, as gathered by the department of commerce are presented below:

1931*	Output, tons	Shipments, tons	Orders booked, tons	Per cent operated
Jan.	31,665	31,893	33,098	31.4
Feb.	34,076	33,124	33,042	34.4
March	35,758	37,092	35,098	35.9
April	36,682	38,342	36,507	36.3
May	31,964	36,957	28,716	32.1
June	24,248	28,602	22,495	24.5
July	20,223	23,985	19,667	20.0
Aug.	18,821	20,904	18,705	18.9
Sept.	18,485	18,727	17,854	18.6
Oct.	20,444	17,802	18,558	20.4
Nov.	17,984	18,336	18,971	18.3
Dec.	21,503	20,206	19,811	21.5
Year	311,853	325,970	302,522	26.1
1932				
Jan.**	22,030	21,272	21,932	23.3

*Revised.
**Preliminary

Enameled Ware Is Lowest For More Than Year

Enameled ware production in January was the lowest in more than a year, with the exception of November, 1931, and exceeded that month by only a narrow margin. Department of commerce figures show the following decline from previous months:

In Dozens

1931	Total	White	Gray and Colored
Jan.	267,232	84,917	182,315
Feb.	289,205	96,812	192,393
March	312,916	103,375	209,541
April	281,339	99,218	182,121
May	264,953	106,091	158,862
June	232,672	81,588	151,084
July	246,858	83,483	163,375
Aug.	251,544	90,546	160,998
Sept.	307,068	97,635	209,433
Oct.	255,782	81,866	173,916
Nov.	197,080	62,904	134,176
Dec.	233,267	54,565	178,702
Year	3,189,916	1,043,000	2,096,916
1932			
Jan.	198,627	57,973	140,654

Galvanized Ware Shows Gain in 1931 Total

Contrary to the record of many other lines of production in 1931, both production and shipments of galvanized sheet metal pails and tubs were greater than in 1930, as shown by figures gathered by the department of commerce and presented below. Although November and December production was lower than during any other month in 1931 the total for the year was in excess of the preceding twelvemonth. Comparisons follow:

In Dozens

1930	Pails and Tubs Production	Pails and Tubs Shipments	Other Ware Production
Nov.	60,798	68,330	16,061
Dec.	87,140	68,898	21,657
Year	1,309,097	1,307,928	440,981
1931			
Jan.	103,677	133,977	23,716
Feb.	132,781	120,723	34,347
March	146,438	144,637	31,542
April	143,258	140,080	34,929
May	121,413	122,072	28,390
June	92,460	90,747	26,304
July	103,345	114,134	26,970
Aug.	136,003	129,693	34,709
Sept.	110,253	120,851	32,276
Oct.	98,340	88,270	26,626
Nov.	67,145	72,011	15,760
Dec.	72,558	63,163	11,758
Year	1,326,511	1,342,566	327,327

Fabricated Steel Makes New Low Mark in January

Bookings and shipments of fabricated steel in January, as reported to the department of commerce, were far below those of any month in 1931 and also of 1930. Bookings were only 12.3 per cent of capacity of reporting manufacturers and shipments only slightly higher at 16.5 per cent of capacity. Comparisons are as follows:

	BOOKINGS		SHIPMENTS	
1931	Tonnage	Per cent of capacity	Tonnage	Per cent of capacity
Jan.	158,000	39.5	164,000	41.0
Feb.	158,800	39.7	159,600	39.9
Mar.	178,800	44.7	149,200	37.3
Apr.	284,800	71.2	158,800	39.7
May	152,400	38.1	145,200	36.3
June	172,400	43.1	159,200	39.8
July	159,600	39.9	180,800	45.2
Aug.	124,000	31.0	167,600	41.9
Sept.	194,400	48.6	149,200	37.3
Oct.	109,200	27.3	143,600	35.9
Nov.	90,800	22.7	111,600	27.9
Dec.	97,600	24.4	122,800	30.7
Total	1,880,800	39.2	1,811,600	37.7
1932				
Jan.	49,200	12.3	66,000	16.5

Sheet Output Up in February; Sales Down

Sheet steel sales reported by the National Association of Flat Rolled Steel Manufacturers, Cleveland, for February averaged 3739 net tons daily; production, 4281 tons; and shipments, 4025 tons. This was an increase over January of 10 per cent for shipments; 11 per cent for production; and a decrease of 4 per cent for sales. Sales for February totaled 108,441 tons; production, 124,157 tons; and shipments, 116,715 tons.

Unfilled tonnage as of March 1 was 118,022 tons, compared with 126,508 tons Feb. 1. Total sheet capacity in the United States for February was approximately 555,000 net tons, and the capacity on which the foregoing figures are based is 381,550 tons.

Steel Barrel Output in January Shows Decline

Production and shipments of steel barrels declined in January from December but unfilled orders for shipment within 30 days showed an increase, according to figures gathered by the department of commerce. Comparisons are as follows:

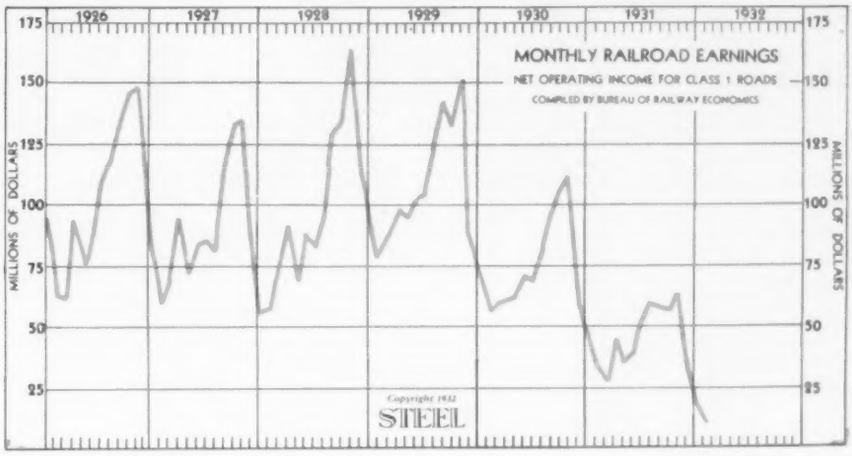
1931	Production	Shipments	Unfilled orders within 30 days
Jan.	421,814	427,622	210,416
Feb.	450,134	449,485	231,738
March	550,583	554,332	242,626
April	591,399	600,566	253,622
May	610,788	618,801	248,138
June	552,955	549,781	239,290
July	580,565	581,450	238,258
Aug.	449,590	455,502	235,002
Sept.	451,562	452,960	205,676
Oct.	489,555	492,145	177,673
Nov.	453,547	444,201	182,740
Dec.	382,483	385,435	150,650
Year	5,984,975	6,010,280	
1932			
Jan.	359,685	352,135	168,365

Foundry Equipment Index Best Since October, 1931

After a dip in January from the December level the index of orders for foundry equipment rose in February to the highest point since October, 1931, at 27.6, as reported by 17 manufacturers to the Foundry Equipment Manufacturers' association, Cleveland. Comparisons for four years follow:

	1932	1931	1930	1929
Jan.	20.5	65.3	160.1	180.5
Feb.	27.6	54.7	196.4	197.0
March		174.4	164.1	209.4
Apr.		57.7	122.8	172.6
May		54.1	92.7	177.7
June		40.9	102.1	177.3
July		38.7	90.6	219.3
Aug.		16.9	85.2	229.5
Sept.		31.9	91.0	216.3
Oct.		44.8	50.0	245.3
Nov.		17.2	45.3	128.6
Dec.		26.3	59.8	208.0

Base: Average monthly shipments for 1922-23-24 taken as 100.



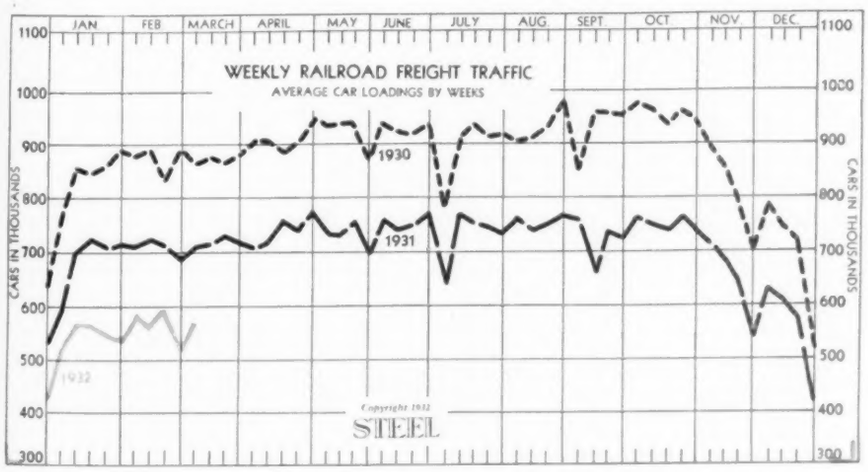
Jan., 1932	$11,713,611
Dec., 1931	21,263,164
Jan., 1931	34,341,414

Railway Earnings at Less Than 1 Per Cent on Investment

The net railway operating income of 168 class I railroads declined sharply in January, according to the Bureau of Railway Economics. Income was $11,713,611, which for that month was at the annual rate of return of eight-tenths of one per cent on the property investment. In January, 1931, net railway operating income amounted to $34,341,414 or 2.34 per cent on the property investment. Operating expenses in January this year totaled $229,548,119 compared with $294,152,807 in January last year or a reduction of 22 per cent. Eighty class I railroads operated at a deficit in January, of which 28 were in Eastern, 17 in the Southern and 35 in the Western district.

Freight Traffic Recovers Feebly From Holiday Week Level

Loadings of revenue freight for the week ending March 5, totaled 559,439 cars according to reports from the car service division of the American Railway association. This is an increase of 23,941 cars over the preceding week, but the showing was not impressive since the previous week contained a holiday. The total for the current week was 163,776 cars below the corresponding week in 1931 and 323,277 cars under the same period two years ago. The peak in the trend thus far in 1932 occurred in the week ended Feb. 6 with 574,756 cars. Miscellaneous freight, less-than-carload lots and forest products were the only classifications that registered an increase.



	1932	1931
March 5	559,439	723,215
Feb. 27	535,498	681,221
Feb. 20	572,606	713,156
Feb. 13	562,465	720,689
Feb. 6	574,756	719,053
Jan. 30	561,157	719,397

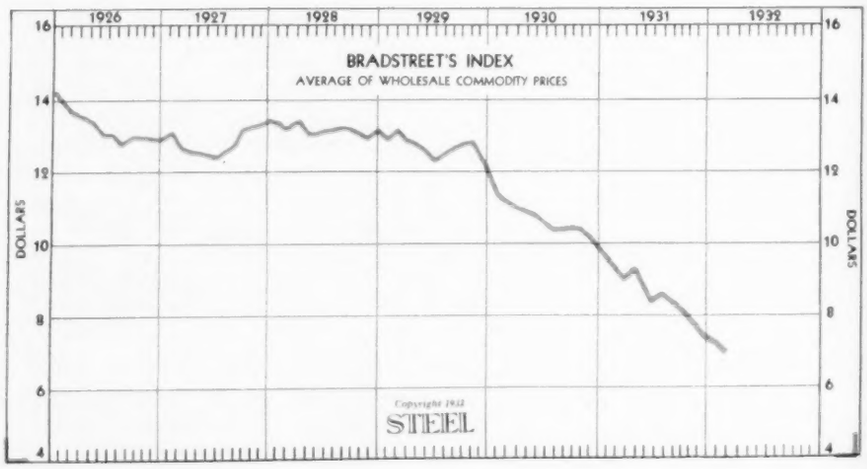
	Per Cent
Feb., 1932	54.8
Jan., 1932	59.2
Feb., 1931	73.1

Barometer of Machine Tool Orders Declines in February

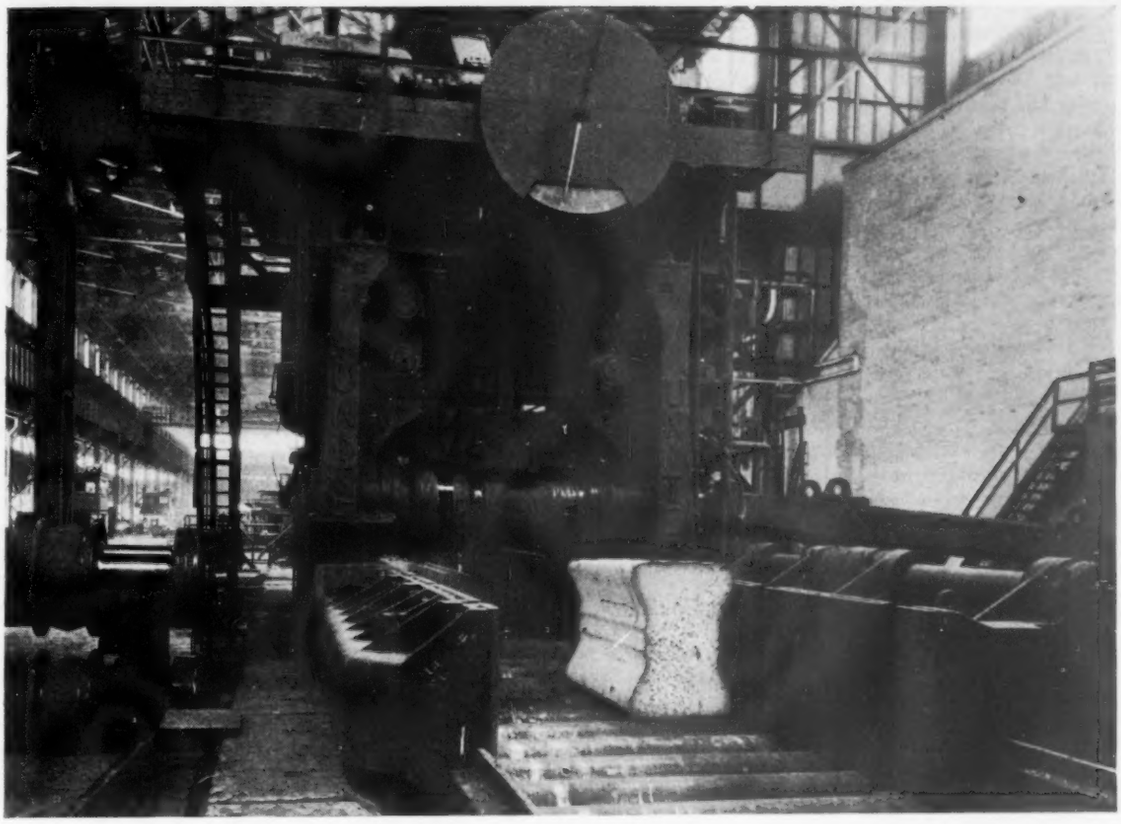
Following the brief recovery made in January, the moving average of machine tool orders dropped to 54.8 in February, according to the current report of the National Machine Tool Builders' association. In January the index was 59.2 while last year there was a considerable gain from 65.3 in January to 73.1 for February. The index of shipments dropped to 44.1 in February, the lowest rate of which the association has record from October, 1925, and a little over half the average rate of 81.0 reported for the entire year of 1931. Unfilled orders for February dropped to 97.1 compared to 108.2 for January and 204.4 for February last year.

Commodity Price Index Sinks To Levels of Late Nineties

After seven consecutive declines, Bradstreet's price index of wholesale commodities continued inexorably downward. On March 1 the index stood at $7.31, a drop of 2.7 per cent from the previous month when the index was $7.52. Last year on March 1 the index was quoted at $9.71 and for the same period in 1930 it registered $11.22. The current price is the lowest it has been since August, 1899, when prices were on the upturn from their all-time low in the nineties. Among the 106 commodities whose prices are listed in the index, 13 showed gains against 36 showing decreases. In the preceding month there were 16 gains and 37 decreases.



	1932	1931
March 1	$7.31	$9.71
Feb. 1	7.52	9.31
Jan. 1	7.73	9.51
	1931	**1930**
Dec. 1	7.91	9.84
Nov. 1	8.09	10.06
Oct. 1	8.30	10.30



View of 54-inch reversing blooming mill stand, showing an ingot entering the mill

New Beam Mill Rolls Wide Flange Structural Shapes

Part II

THE new wide flange beam mill at the South works of Illinois Steel Co., South Chicago, Ind., placed in operation in December, 1930, is designed to produce structural shapes ranging from 8 to 36 inches deep with flanges from 6 to 15 inches wide and weighing from 21 to 425 pounds per foot. The capacity of the mill is estimated at 40,000 tons a month. The mill is located at the northwest end of the plant adjacent to the existing 28 and 22-inch structural mills, thereby forming a group of mills with capacity for the production of a full line of structural shapes in sizes up to 36 inches in depth. The new unit includes a 54-inch reversing blooming mill with the top and bottom rolls driven by separate 5000-horsepower motors; a 52-inch reversing roughing mill with the main roll stand driven by a 7000-horsepower motor and the 40-inch edging stand by a 2000-horsepower motor; a 52-inch intermediate reversing stand with the main roll stand driven by a 6000-horsepower motor and the 40-inch edging roll stand by a 2000-horsepower motor; and a 52-inch one-pass finishing stand driven by a 3000-horsepower motor.

At the east end of the mill and at right angles to it is located the soaking pit building, 147 x 798 feet, containing the seven 2-hole pits, fuel for which is provided by adequate gas producing facilities. The pit furnaces are served by two 25-ton soaking pit cranes. Various sizes of ingots are handled, the maximum weight per ingot being approximately 32,800 pounds. Tunnels are installed below the soaking pits for handling slag and to provide easy access to valves, etc. Slag is run into pots and removed through a series of openings east of the pit building by a 10-ton overhead traveling crane.

Ingots are transferred to the mill by an ingot tilting car operating the full length of the soaking pit building. Special electrical con-

trol equipment is installed by which the pit cranemen can control operation of the soaking pit covers and the ingot car. An electrically-operated transfer car is provided to transfer the ingots from the tilting car to the blooming mill entering table.

Adjoining the soaking pit building on the west is the blooming mill building, 125 x 207 feet, housing the 54-inch reversing blooming mill stand, entering and delivery tables and manipulators. This mill is equipped with an electric roll-changing device which greatly reduces the time for changing rolls. A 100-ton traveling crane commands this building. Racks are provided for storage of rolls.

Adjoining the blooming mill building on the west is the 52-inch mill building, 110½ x 756 feet, which is served by one 300-ton and one 50-ton traveling crane. Racks for roll storage also are provided. Setting-up stands are installed at the roughing, intermediate and finishing mills where housings and rolls may be assembled complete. When roll changes have to be made the entire mill stand is lifted out of the way by the 300-ton crane and replaced with a roll stand already assembled.

Between the 52-inch roughing and intermediate roll stands is an off-set of 11 feet 3 inches in which steel is transferred sidewise before entering the intermediate stand. By this arrangement steel may be rolled in each stand simultaneously without interference and with the advantage of bringing the roll stands closer together.

The 52-inch roughing and intermediate mills each have a main roll stand and an edging roll stand, provided with separate motor drives, pinions, couplings, etc. The edging stand has horizontal rolls but works only on the toe or edge of the flanges, while the main rolls work on the entire face of the web and the inside of flanges. Between the necks of the main rolls is a set of rolls with vertical axes operating on tapered roller bearings, which work on the outside of flanges over the entire width. These rolls are not driven, their rotation being imparted by the steel passing through the main rolls.

The first installment of this article describing expansion of facilities of the Gary works and South works of Illinois Steel Co. appeared on page 23 of the Feb. 29 issue of STEEL, *and dealt with additional open-hearth furnaces installed at these plants*

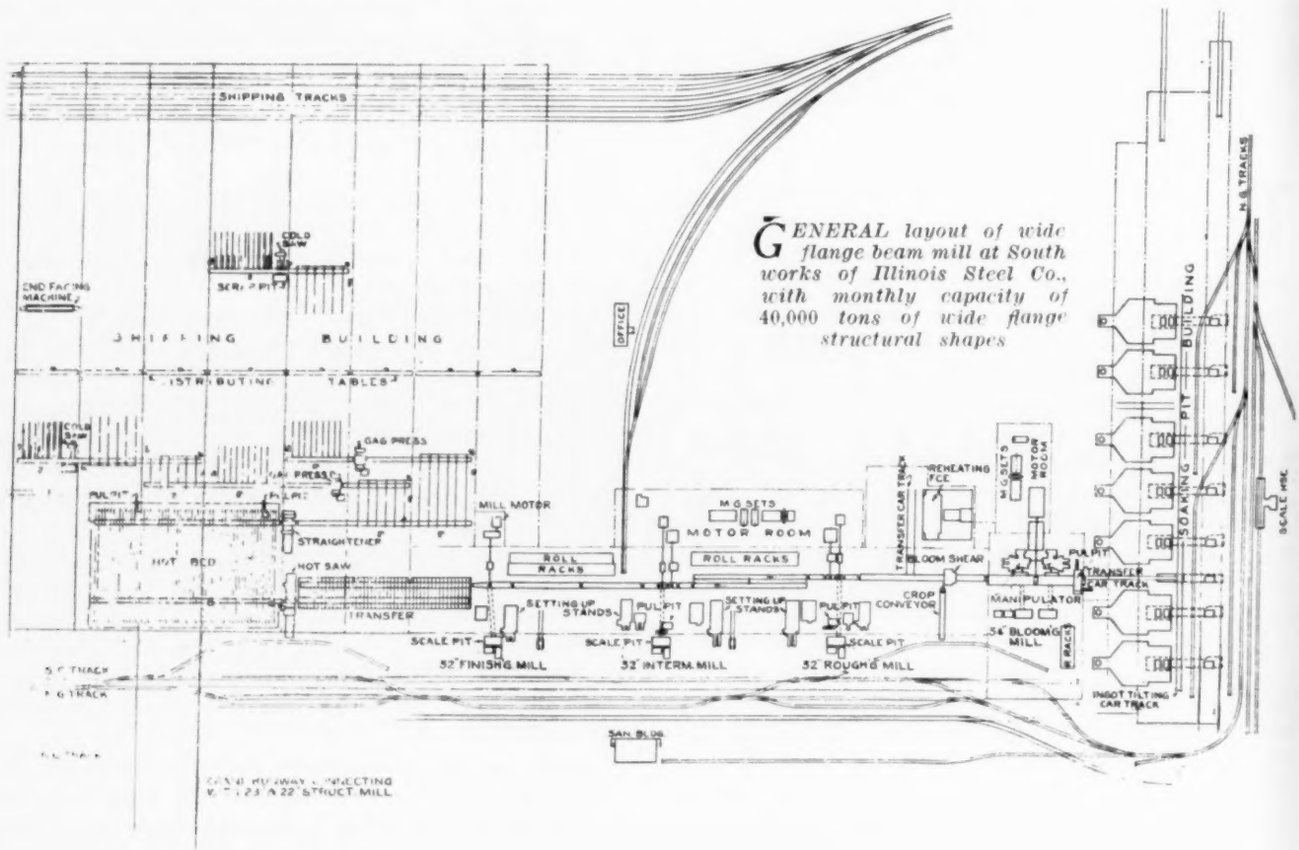
Roughing and intermediate mills have automatic screwdown devices which stop at predetermined settings by a specially-designed limit switchboard. Through automatic control proper speed relations are maintained between the motors driving the main and edging stands for any condition of drafting. Suitable operators' pulpits are provided at each stand for the housing of these automatic controls and switchboards.

Beyond the bloom shear, adjoining the 52-inch mill building on the north, is a furnace building, 63 feet x 75 feet, containing a reheating furnace of adequate size for heating blooms up to 17 feet long. The function of this furnace is to maintain at rolling temperatures second and third cuts of long blooms, while the first cut is being rolled. The furnace is served by a 15-ton charging crane. A car is provided for transferring blooms to the furnace and back to the roller table leading to the 52-inch roughing mill.

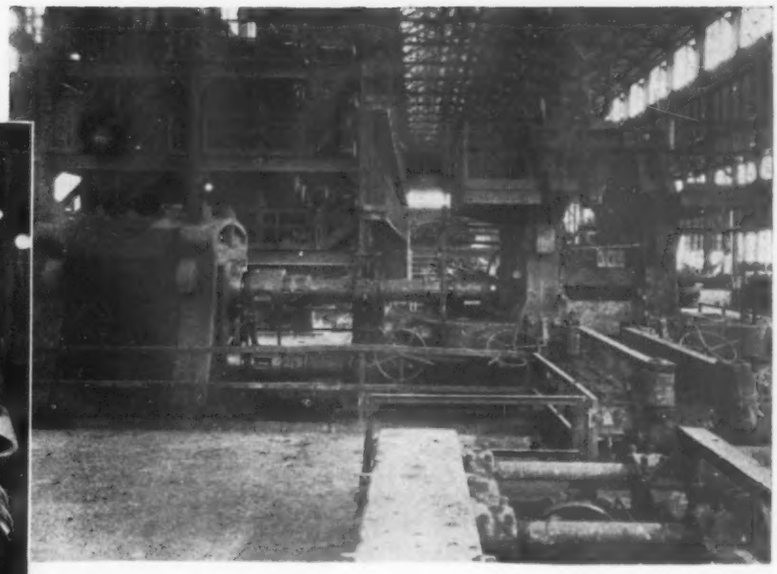
Adjoining the 52-inch mill building on the south is a building, 72 x 1023 feet, for storage of spare machinery. This building is served by a 10-ton traveling crane which also is used for handling scrap and scale from several scale pits located in the building. Adjoining the 52-inch finishing mill on the west is located a hotsaw and a hot bed, 244 x 100 feet, divided into three independent sections for flexibility in handling the product. Additional equipment is provided, such as gag presses for straightening beams, coldsaws and end facing machines, oxyacetylene welding and cutting torches and grinders for properly finishing the product.

Extending north, at right angles to the mill, are eight covered run-

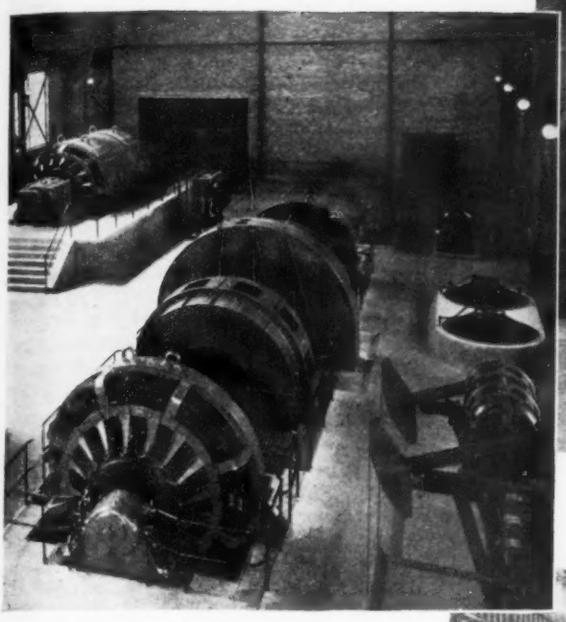
(*Concluded on Page 40*)



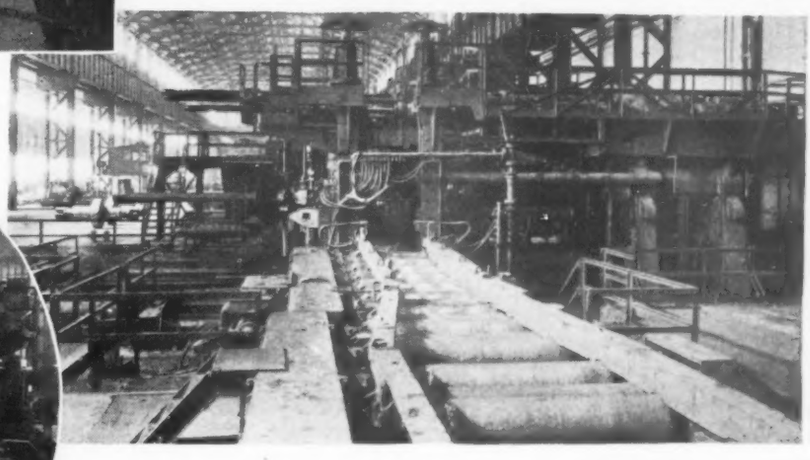
GENERAL layout of wide flange beam mill at South works of Illinois Steel Co., with monthly capacity of 40,000 tons of wide flange structural shapes



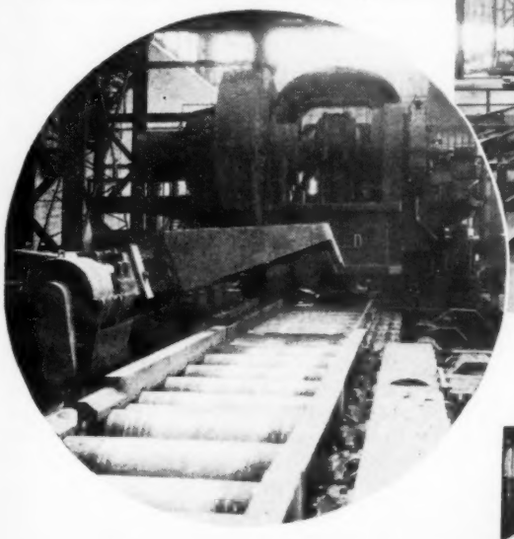
Discharge side of 52-inch finishing mill stand



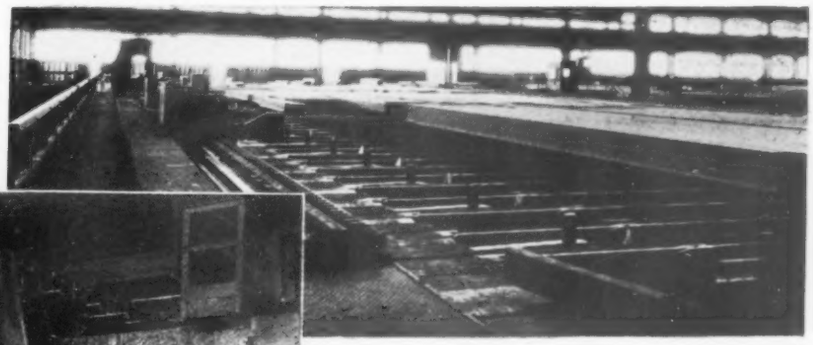
General view of motor room for 54-inch reversing blooming mill

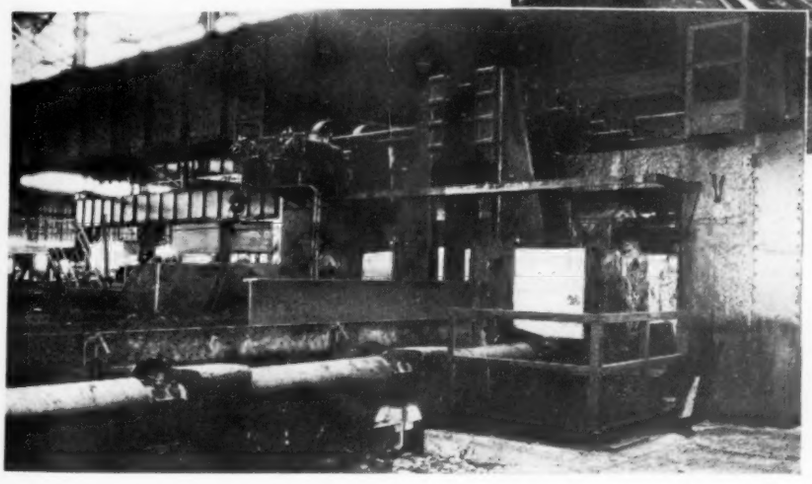


Approach to 52-inch reversing roughing mill stand



Approach table to bloom shear



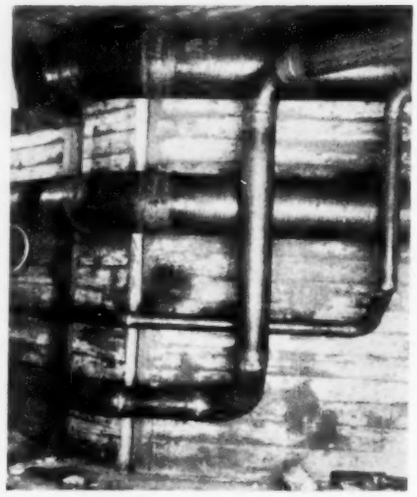


(Above) General view of hot beds in finishing department. (Left) Wide flange beam in gag press

75 Miles of Welded Piping In New Hospital Unit

APPROXIMATELY 60,000 diameter inches of acetylene gas welding were made in pipe lines of the New York Hospital-Cornell Medical Clinic building group, New York, said to be the largest interior welding job ever attempted in building construction, and only recently completed. About 75 miles of steel and wrought iron pipe, up to 24-inch, and practically all welded, is included in the lines covered by heating, power, refrigeration and ventilating.

The 24-inch O. D. steel pipe has a ½-inch wall, requiring deep penetration and unusual skill in welding, the power plant lines undergoing a 500-pound hydrostatic test without a leak. About 750 tons of pipe, exclusive of fittings, from 2½-inch to 24-inch, went into the buildings.



Sections of welded 2, 6 and 12-inch steel pipe at entrance to passageway leading to power house from second sub-basement

Shortage of Trained Welders

The human element played an important part in this project, as it does in all successful welding operations. When the largest subcontract was let about 20 months ago, construction was well advanced and general contractors were calling for pipe in that section of the building group. Several large welding projects were underway in New York and with some restrictions voiced by trade unions, there was a shortage of experienced welders. This contractor, whose work involved a bid price of about $2,000,000, set up a test shop and through this arrangement largely built up a welding staff on the job.

There was practically no warehouse fabrication. Pipe arrived by lighter in the East river nearby direct from the mills with beveled ends and ready for welding. Arriving on the job, pipe was laid out according to drawings, and, while some welding was done on the floor, a good part of the work was in the air with hangers going just ahead of the work. Welding operations were started and completed as the work went along, although architectural changes were rather numerous. Other metal work, involving supports, hangers and anchors also was welded.

Fabrication was extremely difficult, plans calling for loops, sharp turns, curves, cross-overs, underground tunnels, and sub-basement work, all planned for a minimum of space, as shown in accompanying illustrations. Steam and brine lines were subjected to 350 pounds hydrostatic pressure immediately after welding with few leaks. Every weld was stenciled by the workman who made it to allow checking on the work.

Welding of pipe in one of the largest buildings covers practically 29 floors, allowing for three sub-basements. Steam lines will operate at 200 pounds pressure. In addition to difficult fabrication in large pipe connections, equipment and apparatus in the hospital buildings is intricate. Heating coils in the operating rooms with few exceptions are designed for hot water. In addition to high and low pressure steam lines, pipes in some instances carry compressed air and brine. Pipes were delivered in 18 to 23-foot lengths. A variety of steels also was used, there being considerable noncorrosive welded material in the kitchens. There are eight separate hot water heating plants with tanks and pumps, all welded except in a few places.

Welded low-pressure 12-inch steam line from under-street tunnel from power house to pipe level in second sub-basement

Similar Methods Employed

While the several contractors doing the work differed somewhat as to practice, methods in the main were similar. T. F. Hall Inc. did the heating, refrigeration, power and ventilating in the power house, employes' building, garage and nurses' building while Almirall & Co. did the bulk of the other buildings. Petroleum Heat & Power Co. installed the oil burning system, requiring considerable piping by which fuel oil could be pumped from barges in the East river into the plant. Marc Eidlitz & Son were the general contractors for the entire project.

The Hall organization welded 13½ miles of pipe, mostly steel with some wrought iron from ¾ to 24-inch. This contractor installed 330 tons of pipe, mostly from the Jones & Laughlin Steel Corp. mills, a smaller tonnage being supplied by the National Tube Co. and Reading Iron Co.

One smoke duct took 132,000 pounds of ¼ and ¾-inch plates while for the forced draft duct 68,000 pounds of No. 10 and 12 black sheets was required. The ventilation under the Hall contract took 110 tons of sheets, 75 per cent being galvanized, 20 per cent black and 5 per cent copper, the material being supplied by the American Sheet & Tin Plate Co. and the New Haven Copper Co. Nearly 1000 tons of sheet metal was installed by the Almirall company, also

88 fans in the ventilating work. Alan Wood Steel Co. supplied the black sheets and the American Rolling Mill Co. the galvanized. The Almirall organization welded about 50 miles of pipe, the largest being 20-inch, supplied by the National Tube Co. and by A. M. Byers Co.

Special Refractory Work In Skelp Furnace

In connection with the article "Continuous Manufacture of Welded Conduit" published on page 31 of the Feb. 8 issue of STEEL and describing operations in the plant of the Fretz-Moon Tube Co. Inc., Butler, Pa., insufficient information was given as to the refractories used in the specially-designed gas-fired skelp heating furnace.

As stated then, this furnace is 125 feet long and is divided into a preheating zone and heating zone. The first 50 feet, constituting the preheating zone, is made entirely of fireclay brick

Welded loop fabrication of 12-inch steam line for short right angle turn in the boiler room

laid with thin troweled joints of Krome-patch cement. The heating zone, 75 feet in length, is constructed of rammed sillimanite, sillimanite brick roof and a 4-inch thick hearth of plastic chrome ore known as Plastic K-N. Chrome ore hearth is used because of high resistance to slag.

Chrome ore refractories were supplied by E. J. Lavino & Co., Philadelphia, and the sillimanite refractories by the Charles Taylor Sons Co., Cincinnati.

Sleeve-Type Roll Neck Bearing Connects to Circulating Oil System

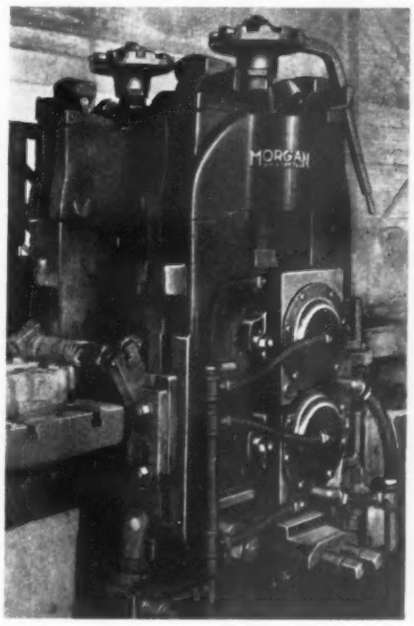
A SLEEVE-TYPE roll neck bearing, fully enclosed and flood lubricated, intended for general rolling mill application, has been developed by the Morgan Construction Co., Worcester, Mass. In contrast to the ordinary open babbitted bearing, lubricated with roll neck grease and cooled by water, the new bearing, known as the Morgoil bearing, is designed to receive oil from a circulating-filtering system and is said to permit full realization of the benefits of an oil lubricated bearing. Lubrication can be supplied by a standard mill circulating oil system when such is available.

Sleeve Journals Provided

Roll necks proper are not used as journals, accurately made sleeve journals being provided in the unit construction, and when bearings are changed the entire unit including the sleeve journal is removed intact. By this construction, bearing surfaces are protected fully and cannot be injured when changing bearings from one roll to another. Roll necks having a slight taper are used, making the unit bearings readily removable.

The design permits roll necks up to 70 per cent of the roll barrel to be used. Roll necks join the roll barrel through large radius fillets and as there are no shoulders or grooves in any vital part of the neck, low stress concentration factors are obtained.

The bearing is provided with quickly detachable hose fittings for connection to an oil supply. Similar drain connections return the oil that has passed through the bearing to the



circulating system. A special seal is provided against the escape of oil and the entrance of water or scale. Endwise adjustment is accomplished from one end of the roll. The unit bearing assembly on this end of the roll contains a complete thrust bearing, while on the opposite end the bearing is free to float endwise within limits, allowing for free expansion of the roll barrel.

The coefficient of friction varies from 0.0018 to 0.004, depending upon the viscosity of the oil and the speed of rotation. No water is required as the negligible amount of friction heat generated is carried away by the oil. This low coefficient of friction results in appreciable power saving.

The capacity of the bearing for carrying heavy pressures is claimed to be high, increasing with speed. Tests have been conducted by the manufacturer, showing that the bearing will carry loads, without breaking down the oil film, beyond the breaking point of rolls having full-sized standard necks.

Laminated Steel and Felt Material Developed

A laminated steel and felt corrosion-resisting material, known as Robertson-Bonded metal (R-B-M) has been carried through laboratory stages of development at Mellon Institute of Industrial Research, Pittsburgh, according to a recent research report, copies of which are obtainable from the institute. In the new metal, felted materials are cemented to steel with heat and pressure, utilizing metals as adhesives. The composite laminated material, the outer surfaces of which are suitable felts, is then saturated with any desired saturant chosen with reference to the corrosive condition to which the metal is to be exposed in service. Paint, lacquer and resin films superimposed on the saturated felt give not only added protection but also improve appearance.

Owing to the fact that it is possible to choose between a number of felts and felt saturants, this new protected metal promises flexibility in providing corrosion resistance. The ductile nature of the metal bond between felt and steel permits the material to undergo forming operations such as shearing, bending, corrugating, rolling and mild drawing without destroying adhesion between the felt and the steel.

By selecting asbestos felt together with fireproof saturant, a fireproof material results; while an increased insulating value over that of bare metal is obtained with any combination of felt and saturants. It is further claimed that the material provides the structural strength of metal with none of the attendant ring or reverberation of bare metal. Application is seen in paneling, pipe-line protection, novelties, etc. The cost is reported to be commensurate with the degree of protection desired.

MAKING THE MOST OF STEEL

DIFFUSION combustion, a new technique in gas-fired heating furnaces, has been adapted to galvanizing pots, as well as forge furnaces. In this firing method, gas and air are maintained in separate and distinct layers, and combustion proceeds only at the flame boundaries. By segregating the lowermost layer of gas, causing it to sweep over the work on the furnace hearth it is possible to blanket completely the work from the effects of superimposed layers of air and products of combustion. Utilizing this method in forge furnaces, the steel comes from the heating furnace free from oxide. Rapid heating rates and a reduction in the size of the furnace required to heat a given amount of steel also result.

IMMERSION melting of metals and salts by gas is possible by means of a rectangular immersion unit of welded high-nickel chromium steel tubing, into which a mixture of gas and air is blown and thereupon burned. Part of the circulating products of combustion is removed continuously through a chimney welded to the heater.

$ $ $

It is possible to learn in advance something of the stresses which will occur in steel parts during service by making photoelastic studies of celluloid models subjected to corresponding loads. Polarized light passed through the model produces a rainbow effect indicating the location and degree of stress. The latest application of this principle is to models of welded structural connections as used in building construction.

$ $ $

Alloy steels of the stainless type are being used for name plates and signs. Borders and letters are embossed. The entire surface can be left in its polished state, the background or depressed part can be covered with enamel so that the bright letters stand out in contrast, or the letters can be enameled.

$ $ $

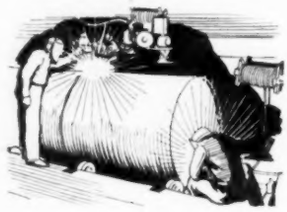
Operators of pressed metal shops who have used chromium on forming dies to increase their life will be interested in the experience of the U. S. Mint at Philadelphia which shows that on dies for stamping nickel coins a thick coating of chromium was unsatisfactory whereas a thin coating of about 0.0002 inch lengthened the life of the dies materially and increased the quality of the coins.

$ $ $

According to reports from Sweden, iron can now be aluminized at 900 degrees Cent. The aluminum partly permeates the iron and covers the surface to provide resistance and protection. The process is suitable for cold-drawn and rolled tubes and cold-drawn band iron and is being tested in the manufacture of kitchen ranges, stoves, ball bearings, dairy appliances and meat grinders.

$ $ $

Decarburization of steel increases with time and temperature, but pressure and gas velocity are found to have little effect when held within limits obtained commercially. Hydrogen when moist is the most reactive but thoroughly purified is much more inert, while carbon dioxide, steam and air rank in this order below hydrogen, and pure nitrogen is found to be totally inert to steel. Products of combustion of manufactured gas must be slightly oxidizing in nature to avoid serious decarburizing effects.



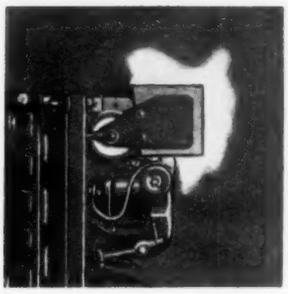
STEELS containing from about 0.10 to 0.45 per cent carbon with 1.0 per cent or somewhat more chromium and approximately 0.20 per cent vanadium have been preferred for large pressure vessels not only for their excellent mechanical properties at both room and moderately elevated temperatures but also because of their uniformity, even in large masses, and their adaptability in all fabricating operations. These desirable qualities account for the production of large ingots for conversion not only into forgings but also into both light and heavy plate for the construction of welded units.

$ $ $

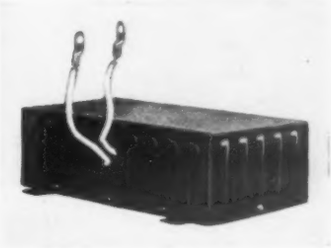
Rubber-coated wire mesh, suitable for use in fabrication of baskets used in electroplating baths, is now on the market. A specially developed process for bonding the rubber to the steel mesh is used, and the material is available with several grades of rubber coatings, both hard and pliable. Various sizes of mesh also are made.

PROTECTOR

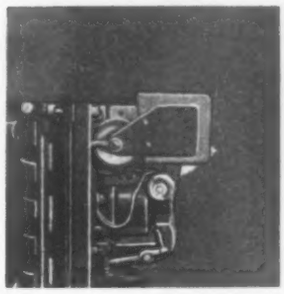
DANGER



This controller was not equipped with any means for suppressing the arc.
Note the big dangerous arc.



SAFETY



The same controller equipped with an Arc Suppressor connected across the magnet terminals.
Note very small arc.

OHIO ARC SUPPRESSOR

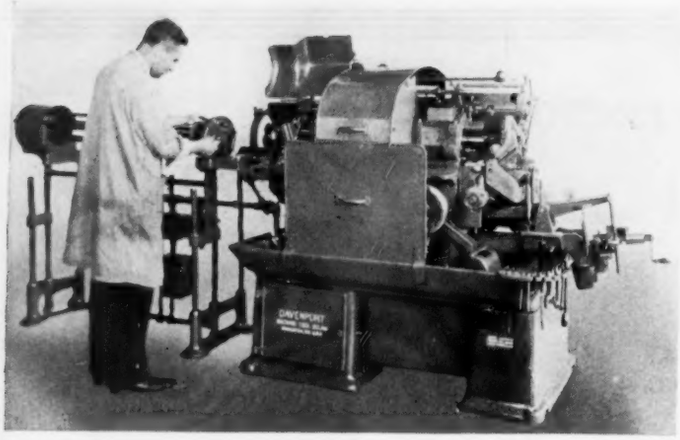
When the circuit of a magnet or large D.C. motor is opened, the rapidly subsiding magnetism generates a high voltage, reaching in the larger magnets to as much as 3000 volts, and in many cases the resulting current surges back along the circuit and destroys lamps, field coils, etc., and even grounds or short-circuits the magnet coil itself if its insulation is weakened by age.

Modern Ohio Magnet Controllers are provided with special resistance to absorb this kick wattage and to reduce the arc at the controller contacts; but thousands of old magnet controllers are not provided with this protection. They operate with big wicked arcs and are a source of danger to other apparatus connected to the same circuit.

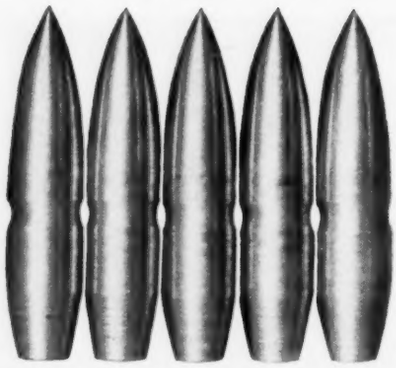
The New Ohio Arc Suppressor is designed to be mounted near the controller and to be connected across the magnet terminals. It consists of several disks of special ceramic material which allow less than one ampere of current to flow at line voltage and this current is wasted. When the big kick voltage comes these disks allow 12 times the current to flow for each doubling of voltage, thus the unit would pass 12 amperes at 440 volts, 144 amperes at 880 volts and so on up; so the unit constitutes practically a short circuit; absorbs all the kick wattage which it dissipates as heat; reduces the arc at the control contacts to a small size and protects all other apparatus on the line.

The unit has practically unlimited life as it cannot burn out and there is nothing about it to deteriorate. BUY ONE AND TRY IT.

The Ohio Electric Mfg. Co.
5906 Maurice Avenue
Cleveland, Ohio



Photo, Davenport Machine Tool Co.



Caliber .50 armor piercing bullet cores, exact size; and at left, multispindle automatic screw machine, such as used for high-speed manufacture of bullet cores

Large Uses of Steel In Small Ways

213th Article ◆ Bullet Cores

CONSUMPTION of steel for the manufacture of armor piercing bullet cores for the United States government in peacetime is relatively small, on a tonnage basis. A considerable proportion of the material, however, is tungsten-chromium steel alloy, generally figured in pounds, and in this classification the amount is fairly large.

Recently interest in bullet cores was evoked by the announcement that a manufacturing company had booked a contract for 500,000 at $26.65 per thousand, for the Frankford arsenal. Formerly all armor piercing cores were manufactured at the arsenal; but lately the policy has been to contract for them.

These bullet cores are the small cigar-shaped pieces of steel fitted into jackets, and in peacetime used mainly for testing armor plate. They are made in automatic screw machines, in two sizes, the caliber .30 core weighing 87.5 grains when finished, and the caliber .50 core, 413 grains.

Consumption Statistics

From Jan. 11, 1924, to Oct. 9, 1931, the number of caliber .50 cores manufactured by or for the government was 2,009,800, requiring approximately 248,000 pounds of the tungsten-chromium steel alloy. Thus the annual average would be approximately 34,000 pounds.

Approximately 8,250,000 caliber .30 cores were made during the past ten years, requiring about 218,600 pounds of the alloy steel, or an annual average of 21,860 pounds.

From March 3, 1925, to Jan. 15, 1932, there were manufactured 5,737,820 caliber .50 ball ammunition cores requiring about 700,000 pounds of mild carbon steel, or annually, slightly more than 100,000 pounds.

Today there are on manufacturing order at the Frankford arsenal 1,817,000 caliber .30 cores, for which 48,300 pounds of the alloy steel will be needed; 1,052,000 caliber .50 cores, requiring 130,000 pounds; and 3,592,480 caliber .50, requiring 444,600 pounds of mild carbon steel.

The composition of the alloy steel is as follows: Carbon, 0.95 to 1.10 per cent; manganese, 0.2 to 0.4; silicon, 0.1 to 0.35; phosphorus, maximum, 0.025; sulphur, maximum, 0.025; tungsten, 3.5 to 4.25; and chromium, 0.4 to 0.6 per cent.

In addition to the mild steel referred to, the ordnance department is experimenting with heat treated carbon steel cores as a possible substitute for caliber .30 and caliber .50 cores, with encouraging results. The composition of this steel follows: Carbon, 0.9 per cent; manganese, 1.6; siilicon, 0.3; sulphur, 0.025; and phosphorus, 0.025 per cent.

The only other approved standard type of ammunition for small arms, manufactured by or for the United States government, and using steel is the 37-millimeter steel shot, a chrome-nickel steel alloy, conforming to the Society of Automotive Engineers' specification 3450. Only a very limited quantity of this type has been produced. The so-called "steel-jacketed" bullets have lead cores, with a cupro-nickel casing.

The diameter of the tungsten-chromium steel rod used in the manufacture of caliber .30 bullet cores is 0.312-inch, with an allowable tolerance of 0.007-inch when hot rolled, and 0.001-inch when cold rolled. For the caliber .50 cores, the diameter is 0.51-inch, with tolerance of 0.01-inch when hot rolled and 0.002-inch when cold rolled. These rods are purchased in lengths varying from 6 to 20 feet, with a requirement that not more than 10 per cent of the lengths shall be shorter than 10 feet.

Considerable improvement lately has been made in the four and five-spindle automatic screw machines used in the production of these cores. With the earlier types one machine turned out a caliber .50 core in slightly more than three minutes, while with the present installation at Frankford arsenal a core is made in approximately 50 seconds. This has been accomplished to a large degree by speeding up the machines and by reducing their nonproductive time. It is understood that some of the latest automatics are capable of making the mild steel bullet cores at the rate of one in four seconds.

Machining Operations

The bullet cores are made in the machines by turning the rods and bringing them in contact with cutters of the proper shape, each forming part of the contour of the core, and the last cutting it off the rod. As many as ten different operations are carried on in the machine, many of them simultaneously.

Briefly, four, five or even six rods of stock, the number depending upon the number of spindles in the automatic, are revolved simultaneously through the system of spindle drive gears. Speeds of 3000 revolutions per minute or even faster, now are common in practice. Cycle of automatic operations in the case of a typical five-spindle set up is as follows:

1. Collet or chuck in nose of one spindle opens, pusher or feed finger within spindle feeds stock forward against a retractable stop, to the length of one core, collet closes, stock stop retracts and pusher draws back.

2. Spindle carrier indexes, bringing rod in line with a breakdown cutter which removes scale and starts form.

3. Carrier indexes a second time, bringing blank in line with rough

DISCRETION

is the better part-

This simple precaution when you order castings insures better casting performance later on.

YOU can't afford to take a chance on your castings. If you are going to turn out a quality product, if you want to satisfy your customers and avoid the necessity of costly replacements, the castings you buy must be as nearly perfect as possible.

They must be strong enough to stand up under unexpected strains and stresses . . . they must be durable and long-wearing . . . they must be tough, uniform, easy to machine, dense of structure. And they *will* be . . . if you specify a small amount of Superior Charcoal Pig Iron in the mix when you order them.

In the matter of castings, discretion is the better part of valor. Why take a chance when it's so easy to make sure of having stronger, better castings? Merely mention in your specifications that "all castings must contain at least 15% to 20% Superior Charcoal Pig Iron". You'll see the difference.

SUPERIOR CHARCOAL IRON CO.
Grand Rapids, Mich.
Debevoise-Anderson Co., Inc., *Eastern Representative*
New York · Boston · Philadelphia

YOUR CASTINGS . . . *made with Charcoal Pig Iron have* . . . GREATER DENSITY · ADDED TOUGHNESS · MORE STRENGTH · LESS SCRAP LOSS · GREATER UNIFORMITY EASIER MACHINABILITY . . . *and you get higher quality finished products.*

Superior Charcoal Pig Iron

forming tool, which removes most of excess metal.

4. Carrier indexes blank to third position where finish forming tool brings it nearly to size.

5. Carrier indexes work to fourth position in line with shaving tool, which gives it final size and finish.

6. Carrier indexes finished core to fifth position, where it is cut off after which feeding again occurs.

This cycle, under cam control, is repeated over and over at high speed, all tools working practically all the time and all rods simultaneously having operations performed upon them, the production time per piece being approximately the time of the longest single operation.

Certain types of the caliber .50 cores, after heat treatment are finished by centerless grinding. A casing of cupro-nickel is applied to practically all of the cores by a swedging operation. The purpose of this casing is to cause the core to fit the bore of the gun; to lubricate the core in the barrel, thus preventing damage to the barrel, and to form a lubricant on impact of the core with the target, increasing penetration. Some of the caliber .50 cores are capable of penetrating armor plate 2 inches thick.

Testing Materials Society Committees Revise Standards and Plan Work

NEW standards, and revisions of existing standards were proposed, new subcommittees were formed and programs for work were laid out at the annual spring group meeting of committees of the American Society for Testing Materials in Cleveland, March 7-11. Over 100 meetings of 20 main committees were conducted during the five days.

Committee A-1 on steel took action to recommend revisions of the various tentative specifications for fabricated pipe including electric resistance welded, electric forge welded and electric fusion welded. In the case of specifications for electric fusion welded a new specification has been prepared for pipe up to sizes 30 inches diameter, the present tentative specifications which are being revised covering sizes over 30 inches.

Review Wire Specifications

The subcommittee on steel reinforcement bars appointed a subgroup on wire reinforcement to review the standard specifications for cold-drawn steel wire for concrete reinforcement. Revisions were accepted as tentative in standard specifications for billet steel reinforcement bars and rail steel bars as to the theoretical weight of both plain and deformed bars.

Action was taken to authorize preparation of methods of testing wire and wire rope. The need for specications covering wires and cables for suspension bridges and similar structures was made evident and the subject was referred to the subcommittee on structural steel for bridges, buildings and rolling stock for consideration.

Revisions as tentative in the standard specifications for steel plates of structural quality for forge welding and specifications for steel plates of flange quality for forge welding involving chemical compositions of plate material suitable for fusion welding were presented by the subcommittee on steel for welding.

Study Sheet Markings

Consideration is being given to the marking requirements of sheets or plates ¼-inch and less thick, as result of a request from the boiler code committee of the American Society of Mechanical Engineers. The subcommittee on valves, flanges and fittings for high-temperature service considered materials for use at temperatures above 750 degrees Fahr.; present specifications contemplated only temperatures up to 750 degrees.

A program of work designed to show that speed of testing is an important factor and must be considered in all specifications is being carried out by a section of committee E-1 on methods of testing. The committee bases its recommendations for speed of testing on the rate of loading in pounds per square inch, per minute, no matter what the material, how large or small the specimen, or whether the specimen be long or short. This method is logical and easily applied for unit stresses at and near the elastic limit. The committee has data showing that steel is being tested about 200 times as fast by one group of laboratories as by another group—entirely too much of a variation to be consistent.

Committee E-4 on metallography decided to revise completely and combine into one standard the two existing methods of metallographic testing, namely, the standard for iron and steel and the standard for nonferrous metals and alloys. The special subcommittee on grain characteristics of steel is preparing a grain size chart representing a series of eight photomicrographs which show the grain size range with sizes 1 to 5 representing coarse grain and representing those materials which give large well defined grains in the hypereuctectoid zones of carburized specimens, and a series 5 to 8 representing those materials which give fine grain in the same zone. Such a chart is considered necessary, because at the present time such materials are bought on grain size specification and there are in existence at least four or five different charts.

Valve Standards Proposed

A proposed American standard giving center-to-face dimensions for three types of ferrous flanged valves —wedge gate valves, globe valves and angle valves—has been released for general criticism and comment, and may be borrowed from the American Standards association, 29 West Thirty-ninth street, New York, by interested parties. The proposed standard covers wedge gate valves in sizes from 1 inch to 24 inches O. D., in cast iron for 125 and 250 pounds steam pressure, and steel for steam pressures of 150, 300, 400, 600, 900 and 1500 pounds; and globe and angle valves in sizes from ½ to 8 inches, in cast iron for 250 pounds steam pressure and steel for pressures of 300, 400, 600, 900 and 1500 pounds.

Beam Mill Rolls Wide Flange Structural Shapes

(*Concluded from Page* 32)

ways, enclosing a space of 720 x 690 feet, for storing materials while in the finishing process. Each runway is served by a 20-ton double-trolley crane for handling and shipping. For handling material from one bay to the other a transfer table, 690 feet long, is provided. To facilitate handling of orders consisting of standard structural shapes and products of the new mill one crane runway from the finishing end of the existing structural mills overlaps one crane runway of the finishing end of the new beam mill.

Suitable skid rails supported on foundations are provided in the storage yards, necessary because of the fact that large tonnages are carried at all times and the loads per square foot are much heavier than heretofore encountered. Depressed standard-gage tracks run at right angles through these shipping runways at the extreme north end, permitting the loading of cars for shipment in each bay.

MACKINTOSH-HEMPHILL

"THE BEST IN ROLLING MILL MACHINERY"

ROLLS

THAT INSURE RECORD TONNAGE

OUR ROLL ENGINEERS WILL GLADLY ASSIST YOU IN YOUR SELECTIONS

MACKINTOSH-HEMPHILL CO.

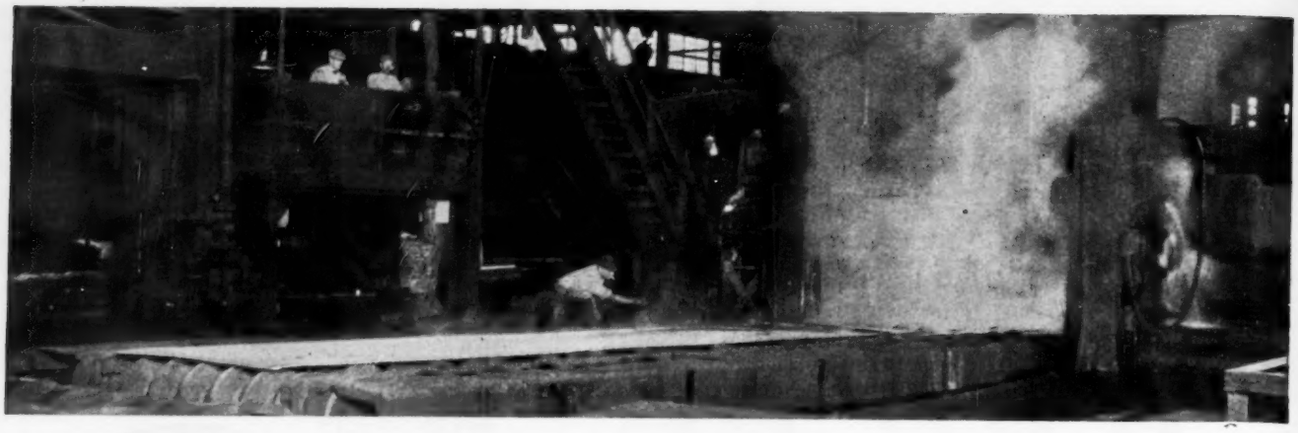
ESTABLISHED 1803 AT PITTSBURGH

General Offices:
Point Building, Penn Avenue at Water Street
PITTSBURGH, PA.

Garrison Division
PITTSBURGH, PA.

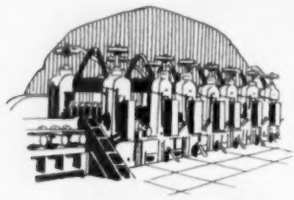
Midland Division
MIDLAND, PA.

Wooster Division
WOOSTER, OHIO



PROGRESS IN STEELMAKING

BLAST furnace gas now is used by three iron and steel producers in this country for underfiring by-product coke ovens, thus releasing coke oven gas for firing open-hearth and reheating furnaces and for other purposes. These are the Weirton Steel Co., Weirton, W. Va.; Interlake Iron Co., South Chicago, Ill.; and the Youngstown Sheet & Tube Co., South Chicago, Ill.



ENTRY guides on diamond passes of bar and billet mills treated with a layer of wear-resisting alloys show a life of 6:1 over steel guides, and in one mill recently equipped with hard-faced units, the inventory was reduced from 500 to 100 guides.

♦ ♦ ♦

Valves operated by the thrustor, an electrohydraulic device for obtaining a straight-line motion without the use of gearing, limit switches and overload protection, recently have been placed in service at hot strip and other type mills for descaling the steel in the process of reduction.

♦ ♦ ♦

Ruptured centers in forgings have been traced by an Ohio producer to the heating cycle to which the billets are subjected in the rolling process. If the billets in the process of conversion to bars are brought to the rolling temperature too rapidly, this defect in the finished forging usually is disclosed upon machining. To prevent defects of this character, therefore, the mill furnishing the billets preheats them to about 1400 degrees Fahr. before charging into the bar mill heating furnace. This procedure also has eliminated to a large extent cracks which frequently occur when forgings are heat treated.

♦ ♦ ♦

Percentage of "snakes" in both open and killed open-hearth steels is greatly reduced by charging the stripped ingot into the soaking pit as soon as possible after the ingot freezes, according to a Pennsylvania steelmaker.

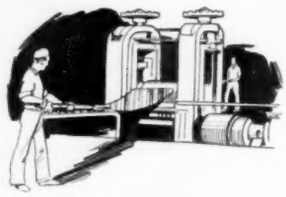
♦ ♦ ♦

Charging coke by weight instead of by volume is a recent development in the blast furnace industry. Hoppers equipped with weight indicators and recorders are installed between the coke screens and skip pit. Mechanical screens are actuated until a predetermined quantity of coke is discharged into the weigh hopper. When the skip arrives in the pit, a sequence switch opens the door of the weigh hopper and the coke flows into the skip. The weigh hopper door then closes, the skip starts its ascent to the top of the stack and coke again flows into the weigh hopper until a skip load is available. The operation then is repeated when the other skip car comes to rest at the bottom of the pit.

A GAS-FIRED open-hearth furnace recently redesigned to burn natural gas in a luminous flame now is using 3400 cubic feet of gas per ton of steel in comparison with 6200 cubic feet previously required. The change-over effected a faster working furnace and prolonged the life of the ports and checkers due to a higher rate of heat transfer from the flame to the bath.

* * *

Tight bonding of zinc with the surface of sheets or wire is increased when the product to be coated is a fully silicon-killed steel without the addition of aluminum, according to an authority on galvanizing practice.



NO SOONER is the principle of "free wheeling" applied to the feed rolls of cold-strip mills than along comes the "wind-shield cleaner" principle for polishing the top and bottom rolls of hot sheet mills while in operation. The equipment is attached to the mill housing and receives its motive power from a crank pin clamped to the wabbler end of the top roll. Polishing is done by two special blocks, which move back and forth over the entire working face of the rolls. The polishing stones are adjustable and can be stopped at any point for localized polishing or their motion can be reversed by the operator at any time.

♦ ♦ ♦

Enamel which, when applied in a single coat on steel sheets, gives an elastic and tightly cohesive surface and withstands severe bending tests, is a recent development in the metal products industries.

♦ ♦ ♦

An Ohio steelmaker who favors tar as a wash for ingot molds states that when the molds are dipped at a temperature of about 400 degrees Fahr. they retain a uniform coating.

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

Pickling Racks

Acid-resisting metal used for pickler's racks, by C. E. Stamm and J. C. Weaver, in Metal Progress, March 1932, *p.* 61, 4 *pp.*, 3 *illusts.*

Several styles of baskets and designs of carriers which may be made of various types of acid-resisting metal, for use in pickling plants, are described. Different plant conditions, including the general design of the pickling department and the nature of the material being pickled, will dictate the type of basket to be used. Steel mills, which pickle sheet and strip steel, require sturdy and stiff baskets or carriers, while in pickling moderate-size drop forgings several more or less standard designs of crates fabricated of bars and small structural shapes are suitable. A new type of basket recently has been designed by a progressive drop forge plant, incorporating a drop bottom for quick unloading.

In all such baskets particular attention should be given to the necessity that the solution should come in intimate contact with all pieces, so the metal at the end may be absolutely clean. This aim is achieved when handling small or cup-shaped forgings by building a reinforced wire basket with a cover which can be latched down, and the whole basket then can be rotated on side trunnions so the acid solution will be able to reach indentations quickly and easily. A number of acid-resisting alloys, both ferrous and nonferrous, are discussed and their adaptability to a wide range of pickling operations considered. Mention is made of a recently developed rubber-covered steel pickling basket.

—STEEL, 3-21-32

Billet Cutting

Economical billet cutting by oxy-acetylene blowpipe, in Oxy-Acetylene Tips, March 1932, *p.* 44, 1 *pp.*, 1 *illust.*

Use of the oxyacetylene cutting process for the cutting of billets to size is standard practice in many steel mills and forge shops. By its introduction many awkward and slower methods of cutting were caused to be abandoned as being obsolete, particularly when the blowpipe was found to be capable of producing rapid and smooth cuts through practically all sizes of billets.

With the present-day need for reducing operating costs to the absolute minimum, it may be found that in some cases further economies can be effected through a careful check on the consumption of oxygen and acetylene with regard to proper pressures, and size of cutting blowpipe nozzles for the particular cutting work that has to be accomplished.

—STEEL, 3-21-32

V-Belt Drives

Type of service a governing factor in design of V-belt drives, by A. F. Clark, in Machine Design, March 1932, *p.* 36, 4½ *pp.*, 6 *illusts.*, 2 *tables.*

V-belts as a whole are just as hardy as any other type of transmission. They will withstand dust, dirt, fumes and moisture to the same degree as other recognized mediums. However, since V-belts are made of rubber and fabric, they should not be subjected to oil or excessive heat, as rubber and fabric are affected quickly by these two conditions.

The user of V-belt drives should keep in mind correction factors for unusual service conditions, correction factors for arc of contact, proper selection of sheaves, correct number and size of belts, avoidance of misalignment, speed ratios between sheaves, etc., if the best operating results are to be obtained.

—STEEL, 3-21-32

Turbocompressors

Control of turbine compressors applied to bessemer converters, by A. P. Mansfield, in Blast Furnace and Steel Plant, March 1932, *p.* 259, 2½ *pp.*, 4 *illusts.*

Positive control of the volume of air passing through a bessemer converter is essential to its proper operation. This control may be in the form of a throttle to regulate the flow from an air supply at sufficiently high pressure to meet all requirements, or it may be by means of pressure which is made just sufficient to send the required volume of air through the converter. If two or more converters are operated from a single air supply the pressure must be high enough at all times to meet maximum requirements of any vessel. If, however, individual compressors are employed for each converter, the pressure may be adjusted as the blow progresses and this is accompanied by a definite saving in the power required to compress the air.

Use of centrifugal air compressors for bessemer converter service until recently has been limited but because of their adaptability to accurate control and their high overall efficiency, they have been found ideally suited to this service. A new installation of three 25-ton converters with individual steam turbine-driven centrifugal air compressors is described. Each compressor is a three-stage unit with a capacity of 38,000 cubic feet per minute.

—STEEL, 3-21-32

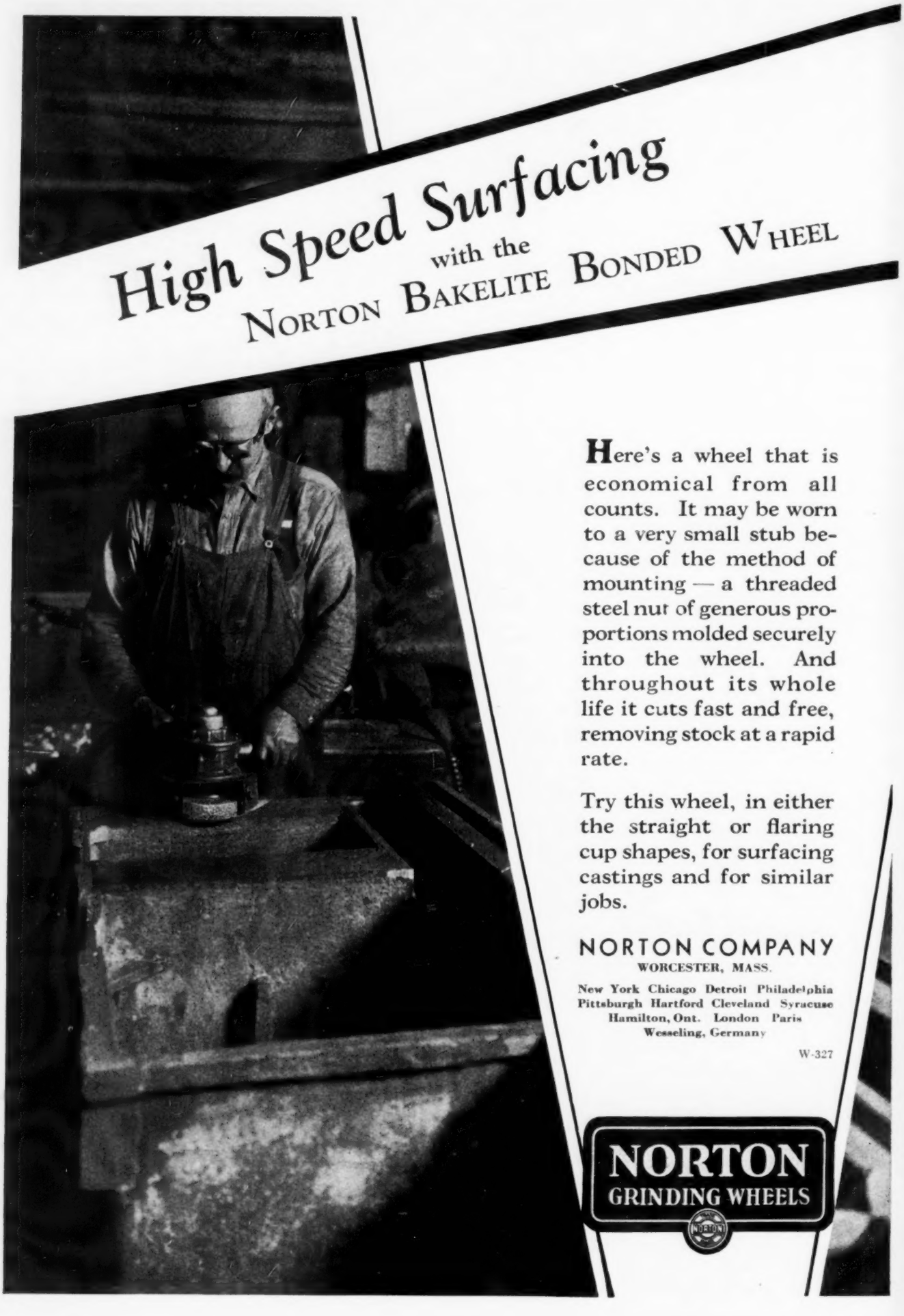
Thermal Expansion

Thermal expansion of heat-resisting alloys of the nickel-chromium, iron-chromium and nickel-chromium-iron types, by Peter Hidnert, in research paper No. 388 *of the bureau of standards, Washington,* 36 *pp.*, 9 *tables,* 40 *illusts.*

Data are presented on the linear thermal expansion of the above-mentioned heat-resisting alloys which ranged in analysis from 0 to 77 per cent nickel, 5 to 27 per cent chromium and 0 to 82 per cent iron. The coefficients of expansion of the alloys were determined for various temperature ranges between 20 and 1000 degrees Cent,, and the effects due to temperature, chemical composition, heat treatment, etc., were determined. Critical regions were located on the thermal expansion curves of some of the alloys.

For a given temperature range, the coefficients of expansion of nickel-chromium alloys containing from 0 to about 20 per cent chromium are nearly the same. The results on the thermal expansion of nickel-chromium-iron alloys were correlated with the structure of the alloys. Transformations from one phase to another caused significant changes in thermal expansion. The expansion curves on the first heating of nearly all of the cast nickel-chromium-iron alloys indicate a retardation or decrease in expansion between 700 and 800 degrees Cent,. due to precipitation of carbide.

—STEEL, 3-21-32



High Speed Surfacing

with the NORTON BAKELITE BONDED WHEEL

Here's a wheel that is economical from all counts. It may be worn to a very small stub because of the method of mounting — a threaded steel nut of generous proportions molded securely into the wheel. And throughout its whole life it cuts fast and free, removing stock at a rapid rate.

Try this wheel, in either the straight or flaring cup shapes, for surfacing castings and for similar jobs.

NORTON COMPANY
WORCESTER, MASS.

New York Chicago Detroit Philadelphia
Pittsburgh Hartford Cleveland Syracuse
Hamilton, Ont. London Paris
Wesseling, Germany

W-327

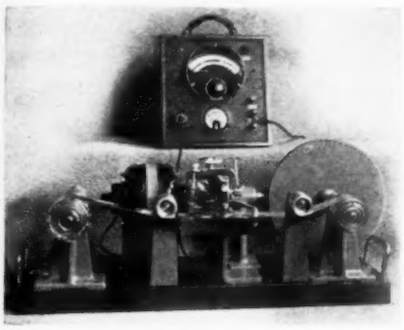
NORTON
GRINDING WHEELS

New Equipment

PRODUCTION FABRICATION TREATMENT FINISHING

Gage Inspects Material Continuously in Rolling

Pratt & Whitney Co., Hartford, Conn., has announced a new application of its electrolimit gage. The process is known as "continuous inspection," and is employed in the rolling of strip and sheet stock, foil, wire, paper, etc., where it is necessary that the size of the material being produced be known to the operator at all times in order that adjustments may be made while the work is in process to maintain uniformity.



Application of Pratt & Whitney electrolimit gage indicating unit

The accompanying illustration shows a working model of the output of a foil mill, with the electrolimit gage mounted in the center between the idler pulleys. The motor moves the foil from left to right through the gage, in the same way that the foil would come from the mill. The large dial of the indicating unit is a microammeter with a 5-inch scale. Standard magnification of the circuit will cause a 1-inch movement of the needle for each 0.0001-inch variation in the thickness of the material rolled.

The material passes between a gaging anvil of either the fixed or roller type, and a gaging contact pointer of suitable design. The latter is one end of a lever, hinged at the center, and kept in contact with the foil by a constant spring pressure. The other end of the lever is in contact with the armature lever of the electrolimit gage head. Thus any change in thickness of the material is transmitted mechanically to the gage, and then magnified through the electric circuit and shown in easily readable form on the indicating dials.

A permanent record of the size of the material may be obtained by a recording instrument, this instrument combining recording and indicating. Such a permanent record of each day's run is important knowledge.

◆

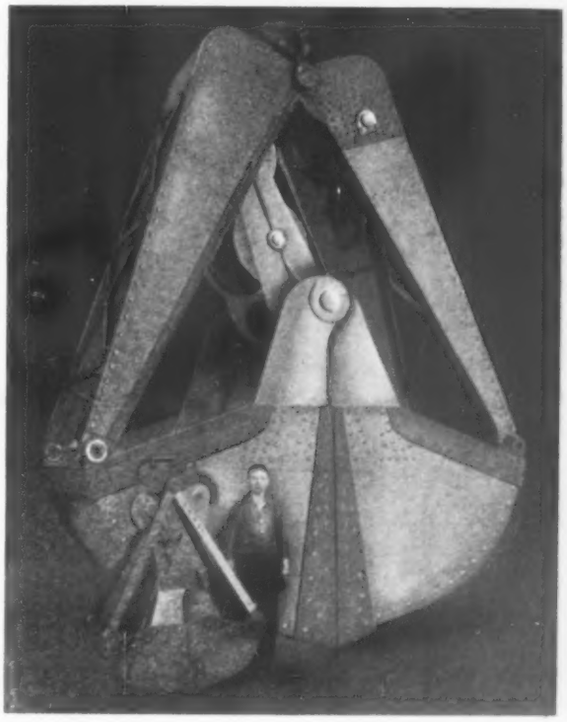
Produces Buckets in Wide Range of Sizes

Wellman Engineering Co., Cleveland, which recently acquired and added to its lines of equipment, the clam shell bucket business of the G. H. Williams Co., reports that it has in production a complete line of buckets from the very smallest to the largest and for every purpose. The range of sizes of the Williams line of buckets is well shown in the accompanying illustration of a ½ cubic yard digging type alongside of the world's largest coal-handling grab bucket of 16½ cubic yards capacity.

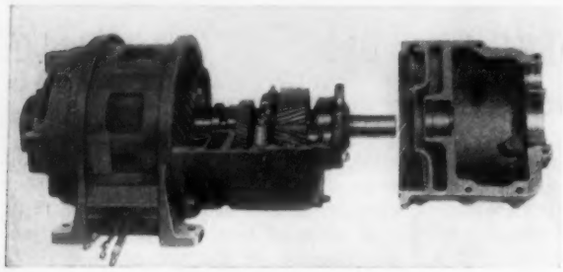
A standard line of power-arm type of fast-digging buckets, from ⅝ to 3 cubic yards capacity, is built and carried in stock to meet various requirements. The Champion Hercules, for extra hard digging, makes good headway in materials too hard for other buckets to dig without first "shooting." The new cleanup-rehandler, with its extra long hinges and wide scoops, covers a greater area at each closing, and is designed for the rapid unloading of cars and barges and the cleaning up of shallow piles of loose materials, such as sand, stone, coal.

Special buckets of the power-arm and multiple-rope types, are built for unusual conditions such as wood and stone grapples, open-hearth cinder, limestone and slag. Single-line, hook-on, cableway, dragline, as well as the large cleanup buckets for bridge-type cranes for handling coal or iron ore with spreads of scoops up to 24 feet are included in the line.

Some of the outstanding features of construction of the standard line of buckets are: Large one-piece full width hinge which keeps the scoops in perfect alignment; rigid "A-frame" formed by rugged corner bars forged from a single steel billet, with the bearing integral; extended corner brackets which bring the corner bar bearings out beyond the backs of the scoops, adding extra leverage; narrower head of cast steel and rolled steel plate for resisting the twisting strains of tough digging; the special Williams tandem arrangement of power-arm sheaves which gives a straight line closing pull conserving the power for the digging, and the straight cable leads which reduce the cable costs;



THE digging bucket of ½-cubic yard capacity beside what is understood to be the world's largest coal-handling grab bucket of 16½ cubic yards capacity well illustrates the wide range in sizes of the bucket line manufactured by Wellman Engineering Co. which recently acquired the business of the G. H. Williams Co.



SPEED reducer combined with electric motor built by Westinghouse Electric & Mfg. Co. The self-contained units are only a few inches longer than the motors alone

new type extra long roller type guards and transverse roller protecting the cable by rollers on all sides, reducing wear to a minimum; bronze bushings for all moving parts readily accessible and easy to remove.

◆

Speed Reducers Combined With Motors

Westinghouse Electric & Mfg. Co., Nuttall Works, Pittsburgh, has developed new unit drives to afford a simple, compact and efficient arrangement for powering various motor-driven equipment which operates at reduced motor speeds. These new drives, known as gearmotors, consist of speed reducers combined with motors forming self-contained units only a few inches longer overall than motors alone. Each unit, shown herewith, includes a general purpose induction motor and a double reduction nonplanetary type helical gear speed reducer built on the one-piece motor frame.

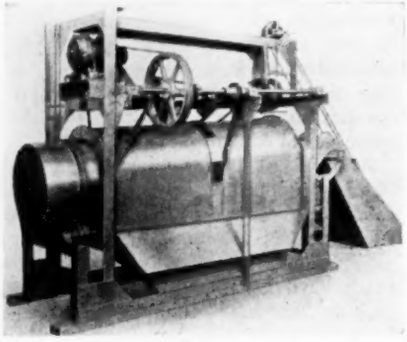
The desired reduction of motor speed is obtained smoothly and quietly by helical gears and pinions the teeth of which are cut to a high degree of accuracy by the hobbing process. By a simple splash system of lubrication, all moving parts of the mechanism and one motor bearing receive oil continuously during operation. The other motor bearing is packed with grease. Seals on all shafts prevent oil escapement

Gearmotors are built in sizes of ¼ to 15 horsepower with a wide selection of output ranging from 69 to 1550 revolutions per minute. A change in the output of any unit speed can be made readily.

◆

Combined Tool Has Number Of Applications

Milwaukee Electric Tool Corp., Fifty-fourth and West Rogers streets, Milwaukee, is bringing out a new product which, it is claimed, will drill holes in almost any material and which, with simple adjustments, also is capable of hammering or sharpening. The combination tool may be used for drilling steel, wood, iron and brick and can be quickly converted from an electric drill having a rotary motion, to an instrument that can hammer holes. By inserting an emery wheel attachment a mechanic can likewise sharpen his tools while on a job.



Sand shaking barrel manufactured by N. Ransohoff Inc.

Caulking tanks, driving small rivets, chiseling and chipping, anchoring chairs and machines in concrete all come within the scope of the device.

◆

Versatility of Design Features Truck

Automatic Transportation Co. Inc., 101 West Eighty-seventh street, Chicago, has added to its line of equipment a new 4000-pound low lift truck, designed to be used in connection with the handling of skid platforms which are finding wide acceptance in connection with the handling of materials. A spur gear drive is employed in this new unit, shown in the accompanying illustration.

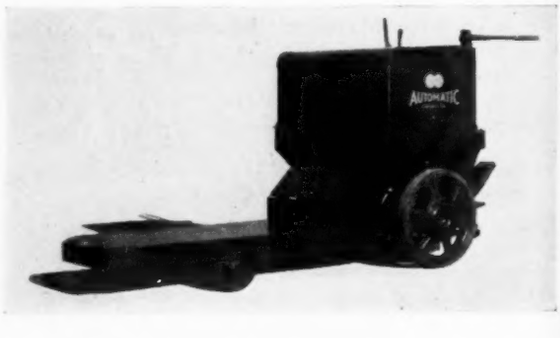
Larger drive wheels are used and the truck is 10 to 15 per cent faster than previous models of the same capacity. In addition, the LG-2 model, as it has been designated, is designed to maneuver in close quarters, making it particularly adaptable for congested industrial plants, terminals, warehouses and railroad shops. Another feature showing the versatility of its design is the use of standard parts. It is possible to modify platform dimensions in such a manner that this truck can be used with skids of any length, width or height. Safety of operation is insured by the use of an interlocking foot controller.

◆

Unit Removes Excess Sand From Castings

N. Ransohoff Inc., Cincinnati, is manufacturing a sand shaking barrel which prevents excessive sand being carried into tumbling barrels, resulting in a savings of time in the tumbling operation. This new method of shaking out annealed castings recentup was adopted by one of the larger malleable foundries in the Middle West.

The annealing pots are dumped into a power-operated loading skip which charges a sand shaking barrel. The barrel, shown in the accompanying illustration, rotates at 50 revolutions per minute and all the excess sand is removed from the castings. The equipment provides for connection of the hood with the exhaust system, dust being removed through the exhaust. Heavy sand falls to the bottom of the hood and is delivered at the side of the machine. The castings are discharged from the end of the barrel into shop receptacles or into the loading skip of the tumbling barrel.



AUTOMATIC model LG-2 low lift truck for use in connection with handling skid platforms, has a capacity of 4000 pounds. An interlocking foot controller insures safety of operation

Shape Needs Expand; Others Lag

Operating Rate Drops Point to 24.5 Per Cent—Ford Tonnage May Turn Tide Overnight—First Quarter Steel Output Same as Last Quarter of 1931

A SPURT in structural steel bookings, putting last week's total up to 20,311 tons, second highest for 1932, accompanied by further broad inquiry for structural material supplies the only encouraging note in the steel markets.

Approaching the final week of what normally is the highest production quarter of the year, steelmaking operations have slumped from one-half to five points in every district save Chicago, where a slight accumulation of rails and track fastenings has lifted the rate two points.

For the entire industry, therefore, a loss of about a point, to 24½ per cent, was recorded last week, but so slight a variation is not conclusive inasmuch as mills are bunching rollings in the interest of economy and the release of Ford tonnage, still expected from day to day, would be reflected overnight. In fact, a recovery at Buffalo this week due to some Ford parts business will probably offset last week's decline.

Notwithstanding the imminence of Ford releases and a barely-perceptible increase in railroad requirements, the steel industry is noticeably downcast. It is recognized that the various constructive forces now at work must be permitted some time for laying the foundation of recovery, yet a dearth of orders more pronounced than at any time during the depression is impressive.

Steel producers face with no small trepidation the fact that output of steel ingots in the first quarter is indicated at 4,500,000 tons, approximating 4,488,000 tons of the last quarter of 1931 and 43 per cent below the 7,954,000 tons of the first quarter of 1931. Meanwhile, on this attenuated production, still lower prices have been realized, the decline from a year ago according to STEEL's composite being 6¼ per cent.

Contributing to the noteworthy structural awards of the past week is the 8000-ton order for a publishing house at Los Angeles. Inquiry which promises speedy closing includes 8000 tons for a bridge at Troy, N. Y., and 7000 tons each for a postoffice at Newark, N. J., and an armory at Buffalo.

Municipalities are more active in placing spring requirements of cast iron pipe, but the individual needs reflect retrenchment programs. San Diego, Calif., is inquiring for 3000 tons of steel pipe. For the Irak oil pipeline the share of American mills is estimated at 22,500 to 37,500 tons, expected to be booked shortly.

An eastern rail mill has consolidated its March-April rolling beginning late this month, having an accumulation of 80,000 tons. Chicago & Alton is closing in a few days on 7000 tons of rails. Demand for track fastenings at Chicago continues good.

Sheet, bar, strip and alloy steel bookings are sensitive to the trend of automobile production at Detroit, which is now lower than at the start of March. Showing of the new Fords, now believed to be within a week or ten days, unquestionably will clear the atmosphere. Ford parts releases for shipment beginning April 1 are more numerous, but tonnage specifications for finished steel still are withheld.

Movement of pig iron and coke to foundries has slackened slightly, though some malleable foundries are busier on additional Ford releases. Two valley furnaces are banking.

The same uncertainty that surrounds production also beclouds prices. New higher levels announced by mills continue asking prices, with a disposition to make concessions on occasional attractive requirements. Minor adjustments put the iron and steel composite of STEEL up 2 cents this week to $29.57, the finished steel composite up 10 cents to $47.02, while the steelworks scrap composite remains $7.93.

Composite Market Averages

	March 19	March 12	One Month Ago (Feb., 1932)	Three Months Ago (Dec., 1931)	One Year Ago (March, 1931)	Ten Years Ago (March, 1922)
Iron and Steel Composite	$29.57	$29.55	$29.56	$30.32	$31.66	$32.97
Finished Steel Composite	47.02	46.92	46.72	47.74	49.42	49.75
Steelworks Scrap Composite	7.93	7.93	7.89	8.22	10.39	11.16

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, pipe, tin plate, nails, sheets, plates, shapes, bars. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Melting steel, compressed sheets.

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	March 19, 1932	Feb., 1932	Dec., 1931	Mar., 1931
PIG IRON				
Bessemer, del., Pittsburgh	$16.76	16.96	17.51	18.26
Basic, valley	15.00	15.00	15.00	16.75
Basic, eastern del., eastern Pa.	15.75	15.75	16.00	17.25
No. 2 foundry, del. Pittsburgh	16.26	16.76	17.51	18.01
No. 2 foundry, Chicago	16.50	16.50	16.60	17.50
*Southern No. 2, Birmingham	11.00	11.20	12.00	13.00
**No. 2X, Virginia furnace	18.00	18.00	18.00	18.25
**No. 2X, Eastern del. Phila.	15.76	15.76	16.01	18.26
Malleable, valley	15.50	15.50	16.10	17.00
Malleable, Chicago	16.50	16.50	16.60	17.50
Lake Superior, charcoal, del. Chi.	23.04	23.04	19.90	27.04
Gray forge, del. Pittsburgh	16.13	16.33	16.88	17.38
Ferromanganese, del. Pittsburgh	80.24	80.24	84.79	89.79

*1.75-2.25 silicon. For local delivery. Northern shipments based on $10, Birmingham. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

COKE				
Connellsville furnace, ovens	2.25	2.25	2.30	2.50
Connellsville foundry, ovens	3.25	3.25	3.25	3.25
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	26.00	25.80	28.25	30.00
Sheet bars, open-hearth, Pitts.	26.00	26.00	28.00	30.00
Billets, open-hearth, Pittsburgh	27.00	27.00	29.00	30.00
Wire rods, Pittsburgh	37.00	37.00	35.00	36.00

	March 19, 1932	Feb., 1932	Dec., 1931	Mar., 1931
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.50	1.50	1.60	1.65
Steel bars, Chicago	1.70	1.60	1.60	1.70
Steel bars, Philadelphia	1.81	1.81	1.89	1.96
Iron bars, Chicago	1.70	1.70	1.60	1.70
Shapes, Pittsburgh	1.50	1.50	1.50	1.60
Shapes, Philadelphia	1.65	1.62½	1.69½	1.78
Shapes, Chicago	1.70	1.60	1.60	1.70
Tank plates, Pittsburgh	1.50	1.50	1.50	1.65
Tank plates, Philadelphia	1.69½	1.69½	1.73½	1.88½
Tank plates, Chicago	1.70	1.60	1.60	1.70
Sheets, No. 10 blue anneal., Pitts.	1.70	1.70	1.85	1.90
†Sheets, No. 24, hot, ann., Pitts.	2.20	2.15	2.40	2.35
Sheets, No. 24, galvan., Pitts.	2.85	2.75	2.90	2.90
Sheets, No. 10 blue anneal., Chi.	1.85	1.90	2.00	2.05
†Sheets, No. 24, hot, ann., Chi.	2.35	2.35	2.55	2.50
Sheets, No. 24 galvan., Chi.	3.00	2.95	3.05	3.05
Plain wire, Pittsburgh	2.20	2.20	2.20	2.20
Wire nails, Pittsburgh	1.95	1.95	1.95	1.90
Tin plate, per base box, Pitts.	4.75	4.75	4.75	5.00

†Comparisons are with old classification No. 24 black sheets.

SCRAP				
Heavy melting steel, Pitts.	$10.25	10.25	10.25	12.90
Heavy melting steel, eastern Pa.	7.35	7.35	7.62½	10.50
Heavy melting steel, Chicago	6.75	6.80	7.50	9.75
No. 1 wrought, eastern Pa.	9.00	9.00	9.50	11.00
No. 1 wrought, Chicago	6.25	6.85	7.45	9.00
Rails for rolling, Chicago	9.50	9.85	10.00	12.00

Sheets

Specifications and Operations Off Slightly — Automotive Orders Light—Few Contracts

SHEET PRICES, PAGE 51

Pittsburgh—Minimum prices on sheets, announced a short time ago, have been tested on only small lots but are being continued into the second quarter. Some buyers are protected for the remainder of this month at lower prices prevailing prior to the recent advance. The market usually is quoted 2.20c, Pittsburgh, for hot-rolled annealed sheets; 2.85c for galvanized; 1.55c for No. 10 hot-rolled sheets, and 2.90c for autobody. Specifications have dropped slightly. Orders from the Ford Motor Co. still are lacking. Sheet operations are lower at slightly below 25 per cent.

New York—Sheet producers report that most specifications against old contracts now are in. As a number of consumers are fairly well covered for their immediate requirements new buying is dull. Prices are steady.

Philadelphia—The sheet market is quiet and prices are untested. Mills have taken no action in applying quantity differentials on less-carloads for direct shipments to jobbers' customer.

Bids close March 29 on 66 tons of pickled and oiled steel sheets, 0.025-inch thick, for the Mare Island navy yard.

Youngstown, O.—New business in sheets appears to be slower in developing than expected. Somewhat sparing in their specifications are automobile partsmakers, but this is made up partly by better demands from refrigerator and electrical equipment builders, stampers and other miscellaneous lines. Important autobody makers that have taken on sidelines are operating at satisfactory rates. No. 24 hot-rolled annealed sheets continue 2.20c, Pittsburgh; autobody are 2.90c, galvanized 2.85c, and No. 10 blue annealed 1.70c.

Cleveland—Continued effort to develop business fails to uncover any sustained demand. Common grades apparently now are in as listless a position as the full-finished grades. Prices continue irregular, with little test of 2.20c, Pittsburgh, on black sheets; 2.85c on galvanized, and 1.70c, for blue annealed. Fisher Body Co. was expected last week to make a purchase through the Detroit purchasing divisions of General Motors. Autobody sheets now are best represented by 2.80c to 2.90c Pittsburgh.

Cincinnati—Sheet specifications for electric refrigerator manufacturers form a bright spot in the market. Automotive demand remains light.

Chicago—Orders are sufficient to keep sheet mills operating at 30 to 35 per cent. A few more buyers have contracted on the basis of second quarter prices announced Feb. 22. Contracts for galvanized at 2.95c, base, mills, are being closed. Southwestern roofing products have not quickened according to expectations. Refrigerator consumption is steady.

St. Louis—The volume of new sheet business in the first half of March exceeded slightly that in the first two weeks of February. No improvement is noted in demand for galvanized.

Birmingham, Ala.—Sheet production has been reduced slightly. An advance in prices for second quarter is intimated on some mills.

Detroit—Bids have been opened at Jackson on Michigan license plate requirements for 1933. With but two exceptions, bidders on the 600 tons required quoted 2.74c, delivered Jackson. Sheet Metal Mfg. Co., Youngstown, O., quoted 2.69½c, delivered, and the Gary Sheet & Tube Co., Gary, Ind., 2.64c. Specifications call for No. 24 gage, 31 x 78½ and 24 x 78½, doxidized and oiled.

Current Finished Steel Prices

Delivered prices subject to freight surcharge corrected to nearest ½c. Asterisk denotes price change this week

Steel Sheets

HOT ROLLED No. 10

Pittsburgh, base	1.55c
Gary, Ind. Harbor, base	1.65c
Chicago, del.	1.70c
New York, del.	1.90c
Birmingham, base	1.70c
Philadelphia, del.	1.86c

BLUE ANNEALED NO. 9-10

Pittsburgh, base	1.70c
Chicago, district mills	1.80c
Chicago, delivered	1.85c
Philadelphia, del.	2.01c
New York, del.	2.05c
St. Louis, delivered	2.07½c
Birmingham	1.85c
San Francisco c.i.f.	2.30c

HOT ROLLED ANNEALED NO. 24

Pittsburgh, base	2.20c
Gary, Ind. Harbor, base	2.30c
Chicago, del.	2.35c
New York, del.	2.55c
Philadelphia, del.	2.51c
Birmingham, base	2.35c
St. Louis, del.	2.57½c
San Francisco, c.i.f.	2.80c

GALVANIZED NO. 24

*Pittsburgh, base	2.85c
Gary, Ind. Harbor, base	2.95c
Chicago, del.	3.00c
Philadelphia, del.	3.16c
Birmingham, base	3.00c
St. Louis, del.	3.22½c
San Francisco, c.i.f.	3.45c

AUTOMOBILE NO. 20

*Pittsburgh, base	2.80c to 2.90c

FURNITURE

Pitts., No. 10 heavy	2.65c
Pitts., No. 20 light	3.15c

TIN MILL BLACK NO. 28

Pittsburgh, base	2.40c to 2.50c
Gary, base	2.50c to 2.60c
St. Louis, del.	2.77½c to 2.82½c

HEAVY COLD ROLLED NO. 10

Pittsburgh, base	2.25c
Gary, Ind. Harbor, base	2.25c to 2.35c
Chicago, del.	2.30c to 2.40c
Philadelphia, del.	2.56c
New York, del.	2.60c
St. Louis, del.	2.62½c

COLD ROLLED NO. 20

Pittsburgh, base	2.75c
Gary, Ind. Harbor, base	2.75c to 2.85c
Chicago, del.	2.80c to 2.90c
Philadelphia, del.	3.06c
New York, del.	3.10c
St. Louis, del.	3.12½c

TIN AND TERNE PLATE

Per 100-pound box, Pittsburgh

Tin plate, coke base	$4.75
*Long ternes, 24, unassort.	3.00c

Gary, Ind., base 10 cents higher

Wire Products

(Prices apply on straight carloads. Mixed and joint carloads take 10 cents higher price; pool carloads 25-cent advance; less carloads 40-cent advance.)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.95
Cement coated nails	1.95
Galvanized nails	3.95

(Per pound)

Polished staples	2.50c
Galvanized staples	2.75c
Barbed wire, gal.	2.60c
Annealed fence wire	2.35c
Galvanized wire	2.80c
Woven wire fencing, (9-11 ga.)	$55.00
(12½ ga. and lighter)	$60.00

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Chicago and Anderson, Ind., $1 over Pitts.-Cleve.; Duluth and Worcester, $2 higher; Fairfield, Ala., $3 higher.

Steel Plates

Pittsburgh, base	1.50c to 1.60c
Philadelphia, base	1.69½c to 1.79½c
New York, delivered	1.80c to 1.90c
Boston, delivered	1.92c to 2.02c
Chicago, base	1.70c
Cleveland, del.	1.70½c to 1.75½c
Lackawanna, N. Y., base	1.60c to 1.70c
Birmingham, Ala., base	1.65c to 1.75c
Coatesville, Pa., base	1.60c to 1.70c
Pacific Coast, c.i.f.	1.80c
St. Louis, del.	1.97½c

Structural Shapes

Pittsburgh, base	1.50c to 1.60c
Philadelphia, del.	1.65c to 1.75c
New York, del.	1.77c to 1.87c
Boston, del.	1.90½c to 2.00½c
Chicago, base	1.70c
Cleveland, del.	1.70½c to 1.75½c
Lackawanna, N. Y., base	1.60c to 1.70c
Birmingham, Ala., base	1.65c to 1.75c
Pacific Coast, c.i.f.	2.00c
Do., wide flange	2.10c

Bars

SOFT STEEL

Pittsburgh, base	1.50c to 1.60c
Chicago, base	1.70c
Birmingham, Ala., base	1.65c to 1.75c
Lackawanna, N. Y., base	1.60c to 1.65c
Pacific Coast, c.i.f.	2.00c
Cleveland, base	1.65c
Philadelphia, del.	1.81c to 1.91c
New York, del.	1.85c to 1.95c
Boston, del.	1.92c to 2.02c
Pittsburgh, cold finish	1.65c to 1.75c
Pittsburgh, forg. qual.	1.75c to 1.85c

RAIL STEEL

Chicago Heights	1.50c to 1.60c
*Eastern mills	1.20c
Pittsburgh	1.30c to 1.35c

IRON

Chicago, base	1.60c to 1.70c
New York, delivered	1.85c to 1.95c
Philadelphia, delivered	1.86c to 1.96c
Pittsburgh, refined	2.70c to 4.20c

REINFORCING

Pitts., billet cut lengths	1.75c
Pitts., stock lengths, mill	1.60c
Chi., billet	1.75c
Chi., rail steel	1.55c to 1.65c
Chi., rail steel, road, bridge and culvert	1.55c
*Philadelphia, cut lengths	1.96c to 2.16c
Cleveland, cut lengths	1.75c

Cold Finished Bars, Shafting

Base Pittsburgh, Chicago, Buffalo and Cleveland	1.90c to 2.00c
Shafting, turned and ground, Pittsburgh, Cumberland, Md.	2.35c to 2.80c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to 6.75 off
Carloads, Chicago dist.	7.00 to 7.50 off

Alloy Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bars, 2.65c, mill

	Alloy	
S.A.E.	Diff.	
2000	0.25	
2100	0.55	
2300	1.50	
2500	2.25	
3100	0.55	
3200	1.35	
3300	3.80	
3400	3.20	
4100 .15 to .25		
Mo.	0.50	
4600 .20 to .30 Mo.		
1.25-1.75 Ni.		1.05
5100 .80 - 1.10 Cr.		0.45
51.00 Cr. spring		0.20
6100 bars		1.20
6100 Spring		0.95
Cr., Ni., Van.		1.50
Carbon Van.		0.95
9250 (flats)		0.25
9250 (rds.,sq.)		0.50

Strip, Hoops, Bands

Hot strip, to 6 in., Pitts.	1.50c to 1.60c
Do, 6 1/16 to 24-in., Pitts.	1.40c to 1.50c
Hot strip to 6 in. Chi.	1.60c to 1.70c
Do, 6 1/16 to 24-in.	1.50c to 1.60c
Cooperage hoop, Pitts.	1.60c to 1.70c
Do., Chicago	1.70c to 1.80c
Cold-roll, strip, Pitts., Cleve.	2.00c
Worcester, 3 tons over	2.20c

Rails, Track Material

Standard rails, mill	$43.00
Relay rails, Pitts., 20 to 45 lbs.	$21.00 to 23.00
50 to 75	18.00 to 20.00
80 to 100	24.00 to 27.00
Light rails, 25-45, mills	$34.00
Light rails, Chicago	$36.00
Angle bars, mills	2.75c
Spikes, railroad, mills	2.60c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.60c
Spikes, boat, barge, Pitts.	2.90c
Track bolts, Chicago	3.50c
Do. standard, jobbers	73 off list
Track bolts, Chicago	3.50c
Tie plate, mills	$37.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread	75 off
Rolled thread ⅝ x 6 and smaller take 10 per cent lower list.	
Eagle list	75 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts	75 off
Tire bolts	60 and 10 off
Stove bolts, 80-25-10 off in pkgs.; 80 25-10-2½ off in bulk.	
Rolled thread machine bolts, ⅝ x 6 and smaller take 10 per cent lower list.	

NUTS

Semifinished	75 off

HEXAGON CAP SCREWS

Milled	80-10-10-5 off
Upset 1 in. diam. and smaller	85-10 off

SQUARE HEAD SET SCREWS

Milled	80-5 off
Upset, 1 in. and smaller	80-10-5 off
Upset, larger than 1 in.	80-5 off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh	2.50c
Do. less carloads, 5 kegs or over	2.75c;
less than 5 kegs, 2.90c.	
Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Sheet piling, Pitts.	1.90c

Rivets

Struc., c.l., Pitts.-Cleve.	2.25c
Struc., c.l., Chicago	2.35c
7/16-in. smaller, Pitts.	70, 10 and 5 off
Chicago, Cleve.	70, 10 and 5 off

Bars

Gain Shown in Needs of Users—Railroad Buying Helps Most—Attempt Detroit Base Again

BAR PRICES, PAGE 51

Chicago—Specifications for bars and other heavy finished products now have reached the heaviest point of this year, aided materially by the recent bulge in rail trackage steel orders. Mills in this district find it difficult to maintain satisfactory operations without railroad material, as the benefits from automotive business are of an indirect nature. Automotive parts specifications still have been depending upon Ford releases. The 1.70c, Chicago, price for bars, plates and shapes remains untested for business of consequence. Deformed bar fabricators have begun to order out material for the large amount of spring highway surfacing in this territory, including $40,000,000 in Illinois alone.

Philadelphia—Most new business in steel bars is moving at 1.60c, Pittsburgh. Specifications show little increase. Iron bars are 1.55c to 1.65c, Pittsburgh.

Pittsburgh—Bar producers report a slight gain in specifications, attributed partly to the advance named for second quarter prices. Automotive requirements generally are unchanged and few buyers are actively interested in second quarter purchases. Producers are quoting 1.60c, Pittsburgh, but this figure still is untested since lower-priced contracts are outstanding.

Youngstown, O.—Some expansion in volume of steel bar buying has led district mills to operate on a slightly broader scale. The gain is in soft steel bars, alloy bar needs having improved only slightly. Common steel bars range from 1.50c to 1.60c, Pittsburgh.

Cleveland—Efforts to get 1.65c, Cleveland base, have been successful on small lots only. Contract buyers still are being permitted to order out on their contracts at varying prices at which they were signed. The merchant steel bar situation in Toledo, O., district and other consuming points west of here has been clarified in a measure through the declaration of a 1.80c, Detroit base, on carbon bars. Whole-hearted efforts to get the Detroit base, Cleveland figure, or 1.70c, Lackawanna, N. Y., depending on user's location, are universal but efforts so far have been nullified by lack of demand.

Detroit—A base on merchant steel bars and small shapes has been named here at 1.80c, Detroit. This base is intended to fluctuate on a differential of $4 a ton over the Pittsburgh market. The 1.80c, Detroit, base will apply to deliveries within the Detroit switching district. On outside Detroit deliveries, 1.85c, Detroit, is base.

Tin Plate Demand Expected To Revive with Spring

Tin Plate Prices, Page 51

Pittsburgh—Stocks of tin plate carried over by canmakers this year continue to restrict new purchases, and specifications and shipments are quiet. Mill operations have declined a few points to around 40 per cent. The approach of the spring season is expected to result in better activity in the tin plate market although demand recently has been considerably below the usual average for this period.

Youngstown, O.—Tin plate mills continue operating at about 45 to 50 per cent. Mill managers are hopeful of demand from western packers expanding soon. Quotations are unchanged at $4.75 per 100 pounds, Pittsburgh, on mill shipment plates.

Cold Finished Demand Is At Reduced Level

Cold Finished Prices, Page 51

Pittsburgh—Activity in cold-finished steel bars has tended downward recently, reflecting the quieter automotive situation. The decline in business is attributed largely to the lack of appearance of orders from the Ford Motor Co. Only a small amount of second quarter businesss is appearing, with prices being extended from recent levels. The market generally is 2.00c, Pittsburgh.

Plates

Rivercraft Requirements at Pittsburgh Expand — General Tonnage Is Continued Light

PLATE PRICES, PAGE 51

Chicago—Plate mill operations are intermittent, as backlogs fail to accumulate. The rigid prorating policies in the East Texas and other oil fields indicate that storage tank programs of consequence may be long deferred. Plates are quoted nominally at 1.70c, Chicago. About 300 tons in oil storage work have been let by an Oklahoma oil company. Plate mill business is almost exclusively bridge work.

Boston—Plate prices are firmer, with mills preparing for a $2 a ton increase starting the second quarter.

New York—A leading eastern platemaker has announced 1.70c, Coatesville, Pa., effective at once, on the general run of new business. This follows similar action by some other makers, an action that is expected to become general shortly. Contract specifications at old prices are expected in before April 1, for delivery at mills' convenience. More interest in specifications is expected to develop as the new quarter approaches.

Norfolk & Western is inquiring for 2500 tons of heavy finished steel, mainly plates, for second quarter. New York Central will open bids March 31 for its quarterly requirements.

Philadelphia—One eastern plate mill advanced its price last week to 1.70c, base, Coatesville, Pa., and another is expected to take similar action shortly, placing all mills in this district on an equal basis. New York Shipbuilding Co. has placed about 200 tons of plates with the Lukens Steel Co., for reconditioning four American Scantic Line Ships. The Mathis Shipbuilding Co., Camden, N. J., is inquiring for 300 tons of plates, not 3000 as indicated by error in these columns last week.

Pittsburgh—Rivercraft work for government engineers is outstanding in the quiet plate market, several small projects being scheduled for early closing.

Cleveland — Business continues scarce with mills awaiting an order backlog before they will start a rolling. Shipbuilding so far this spring has failed to supply much demand. Bridge and tank work also is lacking. Award by East Cleveland, O., for its 120-ton water tank will be made March 22, Youngstown Boiler & Tank Co. being low on combined erection and material on a non-union

basis, although lower bids have been submitted on a union labor basis. Plate mills will have until March 21 to submit final prices to Canton Car Co. for about 1800 tons for the Wheeling & Lake Erie gondolas.

Contracts Placed

2000 tons plates and shapes, two dredges for United States engineers, St. Louis district, to Dravo Contracting Co., Pittsburgh.

300 tons, tanks for Chickasha Cotton Oil Co., Chickasha, Okla., to J. B. Klein Iron Foundry Co., Oklahoma City, Okla.

250 tons, buoys, lighthouse bureau, third district, staten Island, N. Y., bulk of contract to Biggs Boiler Works Co., Akron, O.

250 tons, plates and shapes, tank, Los Angeles, to Western Pipe & Steel Co., Los Angeles.

200 tons, tank and tower, Towson, Md., to Chicago Bridge & Iron Works, Chicago.

140 tons, mining equipment, Buttress and McClellan, Los Angeles, to Southwest Welding Co., Los Angeles.

125 tons, tank and tower, March Field, Calif., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

103 tons, 200,000-gallon water tank, United States engineer, Los Angeles, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

Contracts Pending

3000 tons, El Capitan-Lakeside pipeline, San Diego, Calif., 36 and 48-inch; plans being prepared.

800 tons, plates and flats, crane ship, Panama; Jones & Laughlin Steel Corp., Pittsburgh, low on 500 tons plates, $16,119.34, delivered. Bethlehem Steel Co. low on 300 tons plates and flats with $11,603.84, del.

500 to 1000 tons, bulkheads for box cars, Pacific Fruit Express Co., San Francisco; bids being taken.

500-600 tons, boilers, central heating plant, treasury department, Washington, Combustion Engineering Corp., New York, low, $426,431, four boilers, also on fifth and sixth boilers, $106,608 each.

380 tons plates and shapes, 20 pontoons for United States engineers, St. Louis district; bids opened March 19.

321 tons, navy, Norfolk, Va., and Philadelphia, John T. Hill, Baltimore, low on 284 tons at $9839.01 delivered; Joseph T. Ryerson & Son Inc. low on remainder.

300 to 400 tons, three 165-foot patrol boats for the United States coast guard; John H. Mathis Co., Camden, N. J., contractor.

280 tons plates and shapes, dipper dredge, United States engineers, Pittsburgh district; McClintic-Marshall Corp., low bidder.

120 tons, ½-inch, 59 by 12-foot pieces, department of plants and structures, New York, delivery Queensboro bridge, second quarter needs; bids in; also 55 tons, 25-foot, half-inch angles.

120 tons, water tank, East Cleveland, O.; award to be made March 22.

100 tons plates and shapes, derrick boat for United States engineers, Huntington, W. Va., district; bids opened March 17.

Unstated, two 100-horsepower shallow-draft twin-screw diesel towboats, Inland Waterways Corp., Washington; bids April 18.

Railroads

Chicago Mills Receive Releases On Rail Orders—New Buying Is Slow—Some Fastenings Move

TRACK MATERIAL PRICES, PAGE 51

New York—Delaware, Lackawanna & Western railroad closes bids March 29 on approximately 1500 solid steel wheels for delivery at East Buffalo, N. Y., Scranton, Pa., and Kingsland, N. J. Norfolk & Western closes March 30 on second quarter requirements of locomotive steel tires.

Norfolk & Western is inquiring for 2500 tons of plates, shapes and bars for the second quarter. New York Central opens bids March 31 on its quarterly requirements of bars, plates and shapes.

Philadelphia—The eastern rail supplier now has in the neighborhood of 80,000 tons of rails on books awaiting rolling. Difficulty in obtaining release dates is a deterrent to higher ingot and rail finishing schedules. It is expected that March and April releases in large part can be grouped to begin at the end of March and that this rail producer can roll for both months from late in March into early April, thus obviating two rail-mill shutdowns.

Washington—New Orleans Car Wheel Co. is low on 100 car wheels, 700 pounds each, for the Panama Canal at $1114. United States Steel Products Co. is low on 24 locomotive tender wheels at $859.

Pittsburgh—New inquiries from railroads are lacking and pending work is light. Specifications against orders have made a slight gain over activity earlier in the year but still are at a low rate.

Cleveland—Bids on 100 steel gondola cars for the Wheeling & Lake Erie will be closed March 21, final closing, however, now having been postponed for two successive weeks. Canton Car Co., Cleveland, is receiving bids and will probably build the cars for the Wheeling road. It is understood that old trucks will be used, after the plan the Canton Car Co. had about a year ago of intending to build a fleet of new gondolas on old wheels and axles. The Chesapeake & Ohio is inquiring for its second-quarter railroad spike requirements. Other railroad purchasing is extremely dull, difficulties of mills being in obtaining releases for rails, track material and other railroad steel already booked.

Chicago—Rail releases from several eastern and western roads are growing. As carryover on last season's contracts, 4000 to 5000 tons of rails have been released in the last few days. This tonnage is of enough importance that its partial or entire release now would boost materially rail mill production. Chicago & Alton may place formally 7000 tons of rails with local mills in a short time. About 6000 to 7000 tons of track fastenings for the Nickel Plate and Erie roads has been scheduled with western producers.

Car Orders Pending

Alaska railroad, ten hopper bottom ballast cars.

Chicago, Burlington & Quincy, changes specifications for 50 mine cars from wood to steel.

Wire Sales Are Slow but Show Some Increase

Wire Prices, Page 51

Chicago—March sales of merchant wire products apparently will be slightly ahead of February. Recent improvements in manufacturers' wire specifications have been spotty.

Worcester, Mass.—The temporary spurt in wire production has slackened leaving the market at the level of first quarter production.

New York—While falling short of the usual spring pickup, demand for wire products reflects improvement, with jobbers specifying more freely. Nails are $1.95, Pittsburgh, and plain bright wire 2.20c, Pittsburgh.

Buffalo—Wire works have doubled open-hearth operations and are running at 50 per cent. A fair amount of welded mesh business is in sight.

Pittsburgh—Prices are holding well on what new business is appearing for wire products although activity has changed but slightly over the past several weeks. Wire nails continue $1.95 in carload lots, with plain wire 2.20c and wire rods $37.

Cleveland—Price of $37 a ton for wire rods is firmly held, but not as much can be said for plain manufacturers' wire at a supposed 2.20c. Transactions have varied from the latter figure. Nails, apparently, are maintained at a minimum of $1.95 a keg in carlots, though supposition over orders failing to go to regular sources of supply gives rise to rumors of some supplier offering nails at lower levels.

Structural Shapes

Newark Postoffice and Troy Bridge Will Total 15,000 Tons—Private Construction Still Delayed in West—Prices, by Districts, Still Mixed—Awards High

STRUCTURAL SHAPE PRICES, PAGE 51

New York—Bids close March 30 on the Newark, N. J., postoffice and courthouse, about 7000 tons, while figures also close March 30 on the Troy-Menands state bridge, taking about 8000 tons. These are the two largest jobs pending in the East. There is a slight improvement in the outlook, especially for small projects. New York city departments are expected to have a clearer view of the municipal financial situation after April 15 and some projects, held up for several months, may go ahead. Plain material is now on a 1.60c, Pittsburgh base, or 1.70c, eastern mill, pending lower quotations having been withdrawn. Fabricated steel bids show no reflection of this as yet and are still easy and erratic.

Philadelphia — Placing of 2760 tons for Reading Co. electrification work here to McClintic-Marshall Corp. features structural work. Plain material is 1.65c to 1.75c, Philadelphia, with higher prices more general as the second quarter approaches.

Buffalo — Preliminary estimates place the tonnage in the new state armory here, on which bids will be received about May 1, at 7000. The sisters hospital project here also has been revived for early bids, involving upwards of 2000 tons. Buffalo fabricators also expect to bid on the 8000-ton Troy bridge project scheduled for early award.

Pittsburgh—Activity in fabricated structural steel is slow to broaden. A fair number of inquiries are pending and in prospect but tonnage involved continues light. Competition for work is bringing out extremely low prices on orders for fabricated material. Plain shapes still are unhas been named on the Marseilles, tested at 1.60c, Pittsburgh, with 1.50c generally prevailing on old orders.

Cleveland—Little new structural business of a private sponsorship is coming out, although a few small jobs are continued active. General contractor has been named on the West Side Masonic building here and the Rittman, O., salt plant has been awarded. A Cleveland contractor

Ill., government work which will take 978 tons of structural and about 125 tons of forgings, steel and iron castings, piling and wire fabric. Plain material at 1.50c, Pittsburgh, is unchanged; new business, however, is

Chicago—While the volume of public works inquiry is unchanged, private construction is delayed. Few structural fabricators have backlogs of importance. Plain material is quoted at a single price of 1.70c for business since March 15, but shipment of much material is due on contracts of 1.60c and lower. Bids will be opened in about 30 days for lock No. 4 in the Mississippi river at Alma, Wis., including 750 tons.

Contracts Placed

8000 tons, publishing building, Los Angeles, to Consolidated Steel Corp., Los Angeles.

2760 tons, catenary bridges and electrification work, Reading Co., Norristown, Pa., and Chestnut Hill, Pa., divisions, to McClintic-Marshall Corp., Bethlehem, Pa.

1000 tons, postoffice, Montgomery, Ala., to Virginia Bridge & Iron Co., Roanoke, Va., through Algernon Blair, Montgomery, contractor.

870 tons, sheet steel piling, Pymatuning dam, Jamestown, Pa., to Carnegie Steel Co., Pittsburgh, through C. R. Cummins Inc., Cleveland.

800 tons, aircraft shop, Honolulu, T. H., to Belmont Iron Works, Philadelphia.

600 tons, Episcopal hospital, Philadelphia, to Ingalls Iron Works Co., Verona, Pa.

525 tons, viaduct, Milwaukee, to Milwaukee Bridge Co., Milwaukee.

440 tons, Main street bridge, Niles, O., to American Bridge Co., Pittsburgh, through E. H. Latham & Co., Columbus, O., contractor.

Awards Compared

	Tons
Awards, week ended Mar. 19	**20,461**
Awards, week ended Mar. 12	**6,277**
Awards, week ended Mar. 5	**24,299**
Awards, this week in 1931	**146,484**
Av. weekly awards, 1931....	**34,236**
Av. weekly awards, 1932	**14,475**
Av. weekly awards, Feb.	**11,688**
Total awards to date, 1931	**470,012**
Total awards to date, 1932	**173,707**

430 tons, highway bridge, Valentine, Nebr., to Paxton & Vierling Iron Works, Omaha, Nebr.

350 tons, building, Maywood, Calif., for Chrysler Motor Corp., to Consolidated Steel Corp., Los Angeles.

320 tons, stadium seats, Leland Stanford university, Stanford, Calif., to Judson-Pacific Co., San Francisco.

300 tons, piling, Monongahela river dam No. 4, to Carnegie Steel Co., Pittsburgh.

300 tons, aditional tonnage, Bankers' Trust Co., builder, New York, to American Bridge Co., Pittsburgh; Thompson-Starrett Co., contractor.

280 tons, bridges, Fulton county, Illinois highway commission, to Wisconsin Bridge & Iron Co., North Milwaukee, Wis., and Vincennes Bridge Co., Vincennes, Ind.

250 tons, geenrating plant, Duluth Steam Corp., Duluth, to St. Paul Foundry Co., St. Paul.

250 tons, highway bridge, Superior, Mont., to Minneapolis-Moline Power Implement Co., Minneapolis.

150 tons, truss spans, bridges, Illinois and Iowa, to Vierling Steel Works, Chicago.

250 tons, building extension, Ohio Salt Co., Rittman, O., to Burger Iron Co., Akron, O.

246 tons, battery overhaul building, Mare Island, Calif., to Judson-Pacific Co., San Francisco. Pacific Coast Steel Corp., San Francisco, awarded 85 tons reinforcing, Barrett & Hilp, San Francisco, contractor.

225 tons, engineering building, University of Texas, Austin, Tex., to Austin Bros., Dallas, Tex., to fabricate and erect, Bellows-Maclay Construction Co., Dallas, contractors.

200 tons, state bridge, double 108-foot span steel truss, Monacacy river, Maryland, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

173 tons, takeoff structure, Safe Harbor, Pa., to Belmont Iron Works, Philadelphia.

160 tons, adminstration building, Wells college, Aurora, N. Y., to Syracuse Engineering Co., Syracuse, N. Y., through Hageman-Harris Co. Inc.

160 tons, plant, Queensboro Dairly Products Co., Queens, N. Y., to J. Klein Iron Works Co. Inc., Queens, through Riger Building Corp.

160 tons, bridge, Bureau county, Illinois highway commission, to Midland Structural Steel Co., Chicago.

150 tons, police station, Richmond, street, Boston, to Boston Structural Steel Co., Boston.

150 tons, delinquent hospital, Springfield, Mo., to LaSalle Iron Works, St. Louis.

140 tons, bridge over San Antonio creek, Santa Barbara county, Calif., to Pacific Coast Engineering Co., Oakland, Calif.

125 tons, 3-story plant, Continental Can Co., Harvey, La., to Southern Steel Works, Birmingham, Ala.; Favrot & Livaudias, New Orleans, architects.

125 tons, reconditioning four boats, American Scantic Lines, to Phoenix Bridge Co., Phoenixville, Pa., through New York Shipbuilding Co., Camden, N. J.

120 tons, police station, Berkeley street, Boston, to Palmer Steel Co., Springfield, Mass.

Contracts Pending

8000 tons, Troy-Menands bridge, New York state highway department; bids open March 30.

7500 tons, postoffice, Detroit; Great Lakes Construction Co., Chicago, awarded general contract.

7000 tons, state armory, Buffalo; bids burn cemetery, Cambridge ,Mass. at Albany, N. Y., about May. 1.

2000 tons, sisters hospital, Buffalo; project revived.

1700 tons, plates, shapes and castings, lock No. 4, Ohio river near Pittsburgh; bids open April 10.

1600 tons, state highway bascule span over Fox river, DePere, Wis.; Wisconsin Bridge & Iron Co., Milwaukee, low on superstructure at $135,722.

1300 tons, crossing, First and Glendale street, Los Angeles; bids being taken.

1000 tons, general exhibits building, Chicago Century of Progress exposition, Chicago; bids asked.

1000 tons, postoffice and federal building, Omaha, Nebr.

978 tons, masonry dam with eight gates, Illinois river, Chicago; Huffman Construction Co., Cleveland, contractor. Work also includes 43 tons forgings, 42 tons steel castings, 32 tons iron castings, 22 tons piling and 11 tons wire fabric.

700 tons, alterations, San Francisco postoffice; plans being prepared.

600 tons, power plant and coal breaker, St. Nicholas, Pa.; Stone & Webster, Boston, engineers.

500 to 1000 tons, sheet steel piling, Los Angeles; bids opened.

150 tons, West Side Masonic building, Lakewood, O.; Gilmore-Carmichael-Olson Co., Cleveland, contractor.

101 tons, mostly angles, navy, Norfolk, Va., and Brooklyn, N. Y.; John T. Hill, Baltimore, low on 174,800 pounds, mostly Norfolk, at $3435.44; Egleston Bros. & Co., Long Island City, N. Y., and Gulf States Steel Co., Birmingham, Ala., low on 27,300 pounds, Norfolk, with $551.46 each.

100 tons, postoffice, Merced, Calif.; plans being prepared.

Concrete Bars

Week's Bookings Heavier, Though Without Aid of Private Building—Illinois Program to Take 1000 Miles of Surfacing — Attempt Price Firmness in East

REINFORCING BAR RICES, PAGE 51

New York — Igoe Bros. have booked approximately 350 tons for a subway section, Newark, N. J. Distributors have withdrawn all outstanding quotations under 1.95c, New York, resulting in some increase in volume on the part of buyers seeking to get in ahead of the new 1.60c Pittsburgh price on mill lengths. Determined effort will be made to hold this quotation, making mill lengths delivered to the job 2.05c. Fresh inquiry is light, showing but little seasonal increase in highway and bridge work.

Boston — Reinforcing bars are steadier on the small volume let. Mills are firming their quotations to 1.60c, Pittsburgh, mill lengths. New inquiry is light. The state budget covering bridge and highway work, while being reduced, is expected out soon, stimulating some work.

Philadelphia — Leading reinforcing bar sellers are withdrawing old quotations with view in mind of re-establishing 1.60c, Pittsburgh, as the price on mill lengths by March 21. Effort is also being made to re-establish the $5 a ton differential on cut lengths.

Pittsburgh—Recent cold weather has restricted shipments of reinforcing bars. Specifications continue heavier than in February but new business is quiet and unchanged. Large lots are lacking in recent awards. Producers are quoting 1.60c, Pittsburgh, on mill lengths to distributors.

Cleveland—Twenty-six state highway road and structure jobs go in at Columbus, O., March 25. However, only about 165 tons of reinforcing steel is involved, largest individual lot being for 48 tons in Muskingum county.

Chicago — Numerous postoffice projects are before reinforcing bar fabricators, but no private building work has developed. The 1932 Illinois road program embraces 1000 miles of surfacing. Bids have been taken for a state quarry overhead structure in Waukesha county, Wisconsin, 400 tons. Chicago rail steel bar quotations for road, bridge and culvert work are based on 1.55c.

Awards Compared

	Tons
Awards, week ended Mar. 19	**3,419**
Awards, week ended Mar. 12	**2,250**
Awards, week ended Mar. 5	**6,197**
Awards, this week, 1931	**5,324**
Av. weekly awards, 1931	**6,808**
Av. weekly awards, 1932	**5,070**
Av. weekly awards, Feb.	**3,327**
Total awards to date, 1931	**88,384**
Total awards to date, 1932	**60,740**

Contracts Placed

825 tons, West Side elevated highway, Twenty-second to Thirty-eighth street, New York, to Kalman Steel Corp., Bethlehem, Pa., through Poirer & McLane Corp., contractor.

380 tons, barracks, Sunnyvale, Calif., dirigible base, to Pacific Coast Steel Corp., San Francisco. Reported in Feb. 29 issue of STEEL to unnamed interest.

350 tons, subway section, old Morris canal, Newark, N. J., to Igoe Bros., Newark, N. J.; J. Rich Steers Inc., New York, contractor.

240 tons, engineering building, University of Texas, Austin, Tex., to Concrete Engineering Co., Omaha, Nebr.; Bellows-Maclay Construction Co., Dallas, Tex., contractors.

206 tons, highway work, San Diego and Imperial counties, Calif., to Soule Steel Co. Los Angeles. Reported in March 7 STEEL to unnamed interest.

183 tons, crossing at First and Glendale streets, Los Angeles, to Blue Diamond Co., Los Angeles.

175 tons, bars 100, shapes 75, airport terminal building, Bridgeton, Mo., to Usona Mfg. Co., St. Louis; Kaplan-McGowan Co., St. Louis, contractor.

172 tons, highway work, Santa Barbara county, Calif., to Soule Steel Co., Los Angeles. Reported in Dec. 14 STEEL to unnamed interest.

171 tons, John Marshall school, Los Angeles, to Pacific Coast Steel Corp., San Francisco.

125 tons, buildings, Marine hospital, Mobile, Ala., to Connors Steel Co., Birmingham, Ala.; Algernon Blair, Montgomery, Ala., contractor. Virginia Bridge & Iron Co., Roanoke, Va., awarded 30 tons structural.

100 tons, bars and shapes, Methodist Episcopal church, Montgomery, Ala., to Connors Steel Co., Birmingham, Ala., and Decatur Iron & Steel Co., Decatur, Ala.; Batson-Cook Co., West Point, Ga., contractor.

100 tons, state bridge, Camp Verde-Fossil creek road, Arizona, to Concrete Engineering Co., Omaha, Nebr.; Packard & Tanner, Phoenix, Ariz., contractors.

100 tons, boiler plant, dirigible base, Sunnyvale, Calif., to Pacific Coast Steel Corp., San Francisco.

100 tons, battery building, Mare Island, Calif., to Pacific Coast Steel Corp., San Francisco.

100 tons, library for state teacher college, Fresno, Calif., to Soule Steel Co., San Francisco. Reported in Feb. 29 STEEL to unnamed interest.

100 tons, state bridges, Needham-Wellesley route, Massachusetts, to Concrete Steel Co., New York.

100 tons, state bridges, Saltair highway, Salt Lake county, Utah, to Steel Engineers Co. through Colorado Coal & Iron Co.; Christensen & Gardner, Salt Lake City, contractors.

Contracts Pending

750 tons, delinquent hospital, Springfield, Mo., to Sheffield Steel Corp., Kansas City, Mo.

500 tons, Troy-Menands bridge, New York; bids March 30.

410 tons, grade separation, Waukesha, Wis.; bids closed March 15.

400 tons, state quarry overhead structure, Waukesha county, Wis.; bids March 15.

400 tons, San Francisco women's

college building, San Francisco; bids being taken.
300 tons, Cumberland, Md., grade elimination.
300 tons, pier No. 90, San Francisco; bids being taken.
250 tons, postoffice, Jackson, Mich; Ralph Sollitt & Sons Construction Co., South Bend, Ind., low on general contract.
250 tons, wing, marine hospital, also sea wall and light tower foundation, Detroit; bids April 8.
240 tons, sewage work, Richmond, Va.
222 tons, Montgomery locks, Ohio river, United States engineer office, Pittsburgh, bids April 2.
200 tons, postoffice, Terre Haute, Ind.; David Gordon Co., Cincinnati, low on general contract.
200 tons, teachers college, Arcata, Calif.; bids March 15.
200 tons, postoffice, Davenport, Iowa; B-W Construction Co., Chicago, low on general contract.
165 tons, 12 highway projects, Ohio; bids March 25 at Columbus, O.
125 tons, sewer department, commissioners of District of Columbia, Washington; bids March 17.
100 tons, Los Angeles, Concrete Engineering co., Omaha, Nebr., low.
100 tons, sewers, Newark, N. J.
100 tons, deformed ⅝-inch bars and 20,000 wires, Fort Benning, Ga.; bids March 23.

Pipe

Miscellaneous Small Orders Numerous—Financing Difficulties Slow Municipal Projects

PIPE PRICES, PAGE 66

New York—As American oil companies are interested only to the extent of about 25 per cent in the Irak pipe line project, which may take 90,000 to 150,000 tons, it appears certain American pipemakers will not obtain more than this percentage. Specifications call for delivery of approximately 16,000 tons a month. American bids went in a few days ago. Domestic pipe consumption continues light. A public utility came into the market recently for 1500 tons of steel pipe to cover 1932 requirements, about one-eighth of its requirements last year.

Bids on less than 300 tons of cast pipe for Mount Vernon, N. Y., brought out a low of $27.74 delivered cars, Mount Vernon, or under $24 eastern foundry. Quotations have been rejected, however, due to differences in procedure. New York is expected to take action on yard stocks after April 15.

Boston—Municipalities are more active in closing for cast iron pipe but are taking less than usual. Others will buy in the spot market, Worcester, Mass., included. United States Cast Pipe & Foundry Co. will supply cast pipe for Concord, N. H., and Athol, Mass. Brookline, Mass., is reported to have closed with the New England foundry, which also took several hundred tons for another city. Waterford, Conn., has figures on about 350 tons of cast pipe. Springfield, Mass., closes March 28 on 500 tons.

Pittsburgh—Poor activity in building construction is restricting improvement in demand for standard pipe. Some jobbers have increased their requirements but the gain over the past several weeks has been light. Demand for oil country goods also is slack, and no major line pipe inquiries are appearing although mills anticipate a fair volume of the latter business. Pipe mill operations are lower at slightly under 20 per cent.

Cleveland—Most all of the 26 state highway road improvement jobs going into the highway department March 25 for contractor bids call for lots of 8, 10 and 12-inch corrugated iron pipe. Requirements do not involve large tonnages. One producer of mechanical tubing received some releases from the Ford Motor Co. last week.

Chicago—More waterworks activity is developing, but municipal pressure pipe business fails to expand. Bids will be opened April 5 for a $600,000 water plant at Wilmette, Ill., requiring about 300 tons of cast pipe. Watertown, Wis., has plans out for a sewage disposal system, and Marquette, Mich., has tabulated bids on improvements to its waterworks. Chicago delivered quotations for 6 to 24-inch cast sizes are $38.40 to $40.40.

Sioux City Gas & Electric Co., Sioux City, Iowa, is obtaining prices on seven miles of 12 and 16-inch cast or steel pipe, and special fittings. Kalamazoo, Mich., took bids March 18 on 300 tons of 6 to 12-inch cast pipe and fittings.

Birmingham, Ala.—A few awards of cast pipe are noted, though they are not large. Several specifications are coming out on reports that federal financial assistance will be rendered before long. Municipalities and public service corporations still report inability to place bonds.

Cast Pipe Placed

850 tons, 6-inch, Memphis, Tenn., to United States Pipe & Foundry Co., Birmingham, Ala.
635 tons, 12, 16 and 18-inch, for Solt Lake City, Utah, to Pacific States Cast Iron Pipe Co., Portland, Oreg., and National Cast Iron Pipe Co., Los Angeles, Calif.
300 tons, 8 and 12-inch, Milton, Mass., to Warren Foundry & Pipe Co., Phillipsburg, N. J.
210 tons, 4 and 6-inch, Corpus Christi, Tex., to National Cast Iron Pipe Co., Birmingham, Ala.
175 tons, 8 and 12-inch, class C, Kenyon street improvement, and 12-inch class D, Graham street improvement, Seattle, to United States Pipe & Foundry Co., Burlington, N. J.
155 tons, Portland, Me., to R. D. Wood & Co., Florence, N. J.
125 tons, Athol, Mass., United States Pipe & Foundry Co., Burlington, N. J.
100 tons, 6-inch, South Orange, N. J., to United States Pipe & Foundry Co., Burlington, N. J.
100 tons, castings and fittings, Providence, R. I., to Warren Foundry & Pipe Co., Phillipsburg, N. J.
100 tons, mainly 8-inch, Gardner, Mass., to R. D. Wood & Co., Florence, N. J.
100 tons, Concord, N. H., to United States Pipe & Foundry Co., Burlington, N. J.
Unstated tonnage, 1932 requirements, Lawrence, Mass., to Donaldson Iron Works, Emaus, Pa.

Steel Pipe Placed

Unstated tonnage, United States engineer, Pittsburgh, to Joseph Greenspon's Sons Iron & Steel Co., St. Louis.
Unstated tonnage, 5000 feet, 3-inch galvanized and 3500 feet, mainly 2-inch, Panama, to Laclede Tube Co. St. Louis, total $1932.05.

Cast Pipe Pending

500 tons, 8-inch, class E or centrifugal, with fittings, Springfield, Mass.; bids March 28.
350 tons, 12-inch, Binghamton, N. Y.; bids in.
300 tons, estimated, miscellaneous sizes for $600,000 waterworks, Wilmette, Ill.
Unstated tonnage, 72,000 feet, up to 4-inch, wrought iron or steel, galvanized, Panama, Central Tube Co., Pittsburgh, low, $8125.80 and $8589.50, delivered Cristobal or Balboa.
Unstated tonnage, 4500 feet, 1½-inch, wrought, police department, New York; bids in.

Steel Pipe Pending

Unstated tonnage, 9700 cold drawn seamless steel boiler tubes, 1-inch diameter, navy, Brooklyn, N. Y.; National Tube Co. low, $5428.61.
Unstated tonnage, 13,200 feet welded steel pipe, mainly 2-inch, navy, Philadelphia and Hampton Roads, Va.; Allegheny Steel Co. low; 3600 feet up to 3-inch Mare Island, Edward W. Duffy & Co., Detroit, low; 1963.78 and $766 respectively.
Unstated, 5693 feet, up to 12-inch, mainly 3 and 4-inch, Montgomery locks, Ohio river, United States Engineer, Pittsburgh, April 2.
Unstated tonnage, 1940 feet, 24-inch inside diameter, welded, United States engineer, Cincinnati, March 24.

Strip

Small-Lot Buyers Quoted $2 Ton Above Carlot Users—Volume of Buying Depressed

STRIP PRICES, PAGE 51

Youngstown, O.—Operating rates of strip mills in this district continue about like the preceding week, due to no expansion in the volume of specifications. Some mills started Monday and did not finish the week, while others started Thursday morning to run the week out. Most current specifications call for narrower widths of hot-rolled, with much less demand for cold-rolled. Quotations are unchanged but firmer.

New York—Most hot strip sellers are quoting 1.40c to 1.50c, and 1.50c to 1.60c, Pittsburgh, on wide and narrow respectively, with the top applying to small lots. As this represents no change for most carlot buyers, consumers manifest little interest in future requirements. Cold-rolled strip continues 1.90c to 2.00c, Pittsburgh, but with efforts to establish the top price as the going market for second quarter, some increase may develop by the end of the month.

Philadelphia—Strip buying shows little change. Carload lots of hot-rolled strip continue to move at 1.40c and 1.50c, Pittsburgh, with $2 higher applying to smaller lots. Although 1.90c to 2.00c, Pittsburgh, still prevails, the top price appears stronger on cold-rolled strip.

Pittsburgh—Announcement of higher strip prices has had little effect on specifications against contracts and only a few second quarter inquiries are appearing. Producers now are quoting minimum prices of 1.40c and 1.50c for hot strip with $2 premium for small lots, while a flat 2.00c is named for cold-rolled strip.

Cleveland—For the second quarter, small odd-lot buyers have been further differentiated from tonnage consumers as to price. During that time large buyers will have to pay 1.40c and 1.50c, base Pittsburgh, for hot-rolled. The small buyer, instead of paying $1 a ton over these figures, as has been his custom, from April 1 will pay $2 a ton up, or 1.50c and 1.60c for the same widths. At present, orders for hot-rolled are decidedly scarce. Occasionally a customer will order a small cold-rolled lot.

Week's Imports Light

Philadelphia—The following imports were received at this port during the week ending March 12: 510 tons chrome ore, British India; 348 tons pig iron, British India; 7 tons galvanized steel strips, England; and 20 tons hoop steel, England.

Operations Drop One Point to 24.5 Per Cent

Youngstown, O.— Steel plant operations averaged 27 per cent last week, off three points from the preceding week. They are expected to hold to 27 per cent this week. A sudden advance in the melting rate is a possibility of the long-awaited Ford Motor Co. buying materializes, but no substantial bookings from this interest were in the Valley up to March 18. Twenty of 68 Mahoning valley open hearths were melting last week, against 21 a week prior, and bessemer output the last few days of last week has been lower.

Operations, week ended Mar. 19	**24.5**
Operations, week ended Mar. 12	**25.5**
Operations, week ended Mar. 5	**25**
Operations, this week, 1931	**56.5**
High for 1932, Feb. 6	**28.5**
Low for 1932, Jan. 2	**22**

Philadelphia—A decline of about half a point to 16-17 per cent was noted last week in steelmaking operations in the East. This rate is holding for this week.

Buffalo—District steelworks operations fluctuated from as low as 20 per cent to as high as 35 per cent last week and were believed to be holding at the latter rate at the beginning of this week, with prospect of continuance at or near that figure for the rest of this month. At the week-end, 13 open-hearths were in production. Recently as few as six have been on.

Pittsburgh—Reduced open-hearth operations by several independent interests lowered the ingot rate during the past week to 23 per cent, with only a slight change in prospect for all current week. Blast furnace schedules are unchanged with 11 steelworks stacks active out of 54. Tin plate output is lower at 40, with sheet production also easier at slightly below 25 per cent. Strip is unchanged at 20 to 25 but pipe is down to slightly under 20.

Cleveland—For the second consecutive week ingot operations here have declined from the 40 per cent level, high for 1932. Last week they dropped three points to 35 per cent, representing 12 or 34 open hearths active. American Steel & Wire Co. has taken off a unit, leaving five on; Corrigan, McKinney Steel Co. continues with five producing; and Otis Steel Co. is unchanged with two of eight pouring. A year ago this week, operations were 59 per cent here. The 35 per cent rate is expected to hold this week.

Birmingham, Ala.—Steelworks operations here have declined 5 points to 24 per cent. Gulf States Steel Co. continues with two open-hearth furnaces on at Gadsden, Ala., while the Tennessee Coal, Iron & Railroad Co. has four to five active at Fairfield, a reduction of one.

Warehouse Trade Feels Little Seasonal Impulse

Warehouse Prices, Page 66

New York—Warehouse volume is slightly heavier, although March has not brought the usual seasonal gain. Tonnage is well spread and prices are steadier, notably on sheets.

Philadelphia — Leading jobbers have reduced galvanized sheets $5 to 3.50c to rectify a local condition.

Pittsburgh—Sales are unimproved and for some sellers are off slightly from the February rate. Prices are unchanged, with second quarter advances dependent upon the success of increases in mill quotations.

Detroit—Demand for iron and steel products out of stock continues at about the February rate, which is somewhat lower than a year ago. Thus far the usual spring rise has not been in evidence. Prices are steady.

Cincinnati—Warehouse sales are comparable to those in the latter part of February. Lack of a substantial seasonal gain this month has been disappointing. Prices are steady.

Chicago—March warehouse sales volume is about on a par with February. High finish sheets and structural material are among the materials leading in activity. Wire products and nails are slow. Warehouses are making no changes in discounts on bolts and nuts despite the advance by producers.

St. Louis—A moderate betterment in warehouse sales is evident.

Raw Material Prices

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago furnace	$16.50
Pittsburgh, dist. fur.	15.50 to 16.00
Pittsburgh, delivered	16.13 to 17.13
Valley furnace	15.00 to 15.50
Clveland fur., local del.	15.50
Philadelphia, delivered	15.26 to 15.76
Virginia furnace	17.50
Granite City, Ill., fur.	16.50
Buffalo, fur., local del.	16.00
Buff., all-rail, Boston	19.91 to 20.41
Buff., all-rail, Brooklyn	19.40 to 19.90
Buff., all-rail, Newark	17.78 to 18.28
Ala., Bir. fur., local del.	11.00
Ala., Nor. del., Bir. base	10.00
Alabama, del. Chicago	16.01
Alabama, del. St. L.	14.42
Alabama, del. Cincinnati	13.82
Ala., Phila., dock del.	15.00 to 15.25
Ala., Balt., dock del.	15.00
Alabama, New York dock	15.50
Ala., Boston dock del.	16.50 to 16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	13.82
Montreal, delivered	23.00 to 23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	16.50
Buff., all-rail, Brooklyn	19.90 to 20.40
Buffalo, all-rail Newark	18.28 to 18.78
Buff., all-rail, Boston	20.91 to 21.41
Virginia furnace	18.00
Eastern, del. Phila.	15.76 to 16.26

FOUNDRY, NO. 1X

Buffalo fur., local del.	17.50
Eastern, del. Phila.	16.26 to 16.76

MALLEABLE

Valley furnace	15.50
Clveland fur., local del.	15.50
Pittsburgh dis. fur.	16.00
Pittsburgh, delivered	16.63 to 17.13
Chicago, furnace	16.50
Buffalo fur., local del.	15.50 to 16.00
Eastern Penna., delivered	17.76 to 19.91
Granite City, Ill., fur.	16.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	15.00
Pittsburgh, delivered	15.63 to 16.13
Eastern Penn., del.	15.50 to 16.00
Buffalo fur., local del.	15.50 to 16.00
Montreal, delivered	23.50
Valley, furnace	15.00

BESSEMER

Valley furnace	15.50 to 15.75
Pittsburgh, delivered	16.63 to 17.13
Pittsburgh, furnace	16.00

LOW PHOS.

Valley fur., standard	25.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	15.00
Pittsburgh district fur.	15.50
Pittsburgh, delivered	16.13 to 16.63

CHARCOAL

Lake Superior, del. Chicago	23.04

SILVERY

Jackson County, O., fur. in per cents: 6—$18; 7—$18.50; 8—$18.75; 9—$19; 10—$19.50; 11—$20; 12—$20.50; 13—$21.50; 14—$22.50; 15—$23; 16—$24; 17—$25.50.

Pittsburgh and Buffalo furnace: 7 to 10—$19.50; 15—$23 to $24.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents: 10—$20.50; 11—$21; 12—$21.50; 13—$22.50; 14—$23.50; 15—$24; 16—$25; 17—$26.50.

Coke

Prices Per Net Ton

Beehive Ovens

Connellsville furnace	$2.25
Connellsville foundry	3.25 to 4.50
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	8.76 to 9.16
Chicago, ovens	7.50
New England, del.	10.50
St. Louis, del.	8.50
Birmingham, ovens	4.50
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	5.50
Portsmouth, O., ovens Connell., basis	5.50
Buffalo, ovens	7.50 to 8.00
Detroit, ovens	8.00
Philadelphia, del.	8.75

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports	
Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	9.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% man.	9.50 to 10.00
North African low phos.	8.00 to 9.00
Swedish basic, 65%	8.00
Swedish low phos.	9.00
Spanish, North African basic, 50 to 60%	7.00 to 8.00
Newfoundland fdy., 55%	8.00
Tungsten, spot and future short ton unit, duty paid	$10.75 to 11.00
Chrome ore, 48% gross ton c.i.f.	$17.00 to 18.00

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	24 cents
South African, 52%	23 to 24 cents
South African, 49-51%	22 to 23 cents
South African, 44-47%	21.00 to 21.50
Indian, 48-50% (nom.)	24 cents
Brazilian, 46-48% (nom.)	20 to 21 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Maryland, Georgia, Alabama	$38.00
Missouri	35.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	25.00 to 30.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	38.00
Joliet, Ill., East Chicago, Ind.	47.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	$61.50

CHROME BRICK

Per Net Ton

F.o.b. shipping point	$42.50

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	38.00
Domes, Chewelah, Wash., base	20.90

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$27.00
Pittsburgh, bessemer	27.00
Youngstown	27.00
Cleveland	27.00
Philadelphia	32.75
Chicago	28.00
Forging, Chicago	34.00 to 35.00
Forging, Pittsburgh	33.00 to 34.00
Forging, Philadelphia	38.75 to 39.75

SHEET BARS

Pittsburgh	26.00
Youngstown	25.00 to 26.00
Cleveland	25.00 to 26.00
Chicago	27.00

SLABS

Pittsburgh	27.00
Youngstown	27.00
Cleveland	27.00

WIRE RODS

Pittsburgh, Cleveland	$37.00
Chicago	36.00 to 38.00

SKELP

All grades, Pittsburgh	1.50c

Ferroalloys

(In dollars, except Ferrochrome)

•Ferromanganese, 78-82%, tidewater, duty paid	$75.00
•Ferromanganese, del. Pittsburgh	80.24
Spiegeleisen, 19-20%, domestic fur. spot†	27.00
Ferrosilicon, 50 per cent, freight all., c. l.	77.50
Do, less carload	85.00
Do, 75 per cent	126.00 to 136.00
Silicomang., 2½% carb.	105.00
2% carbon	110.00
1% carbon	115.00
(Spot prices, $5 a ton higher.)	
Ferrochrome, 60-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Do, for spot delivery	10.50
Ferrotungsten, stand., lb. cont.	1.10 to 1.20
Ferrovanadium, 30-40 per cent, per lb. contained, on analysis	3.05 to 3.30
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton	9.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis, (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50
Ferromolybdenum, stand. 50-60 per cent. per lb.	0.95
Cal. Molybdate, lb. cont.	0.80
Molyte, lb. cont.	.80

†Carloads. Differentials apply to quant.
•To users of carloads to 1000 tons annually. Differentials to large users.

Fluorspar

85 and 5 per cent grade

Washed gravel, domes., net ton, del. Pitts. equiv.	$20.31
Washed gravel, import duty paid tide. gross ton	19.50

Pig Iron

Consumption Is Slower—Prices At Pittsburgh Are Easier, Following Reduction at Cleveland

PIG IRON PRICES, PAGE 58

Pittsburgh—Pig iron demand lacks a definite trend. Orders are few and only for small lots. Foundry operations in this district are off slightly and nonintegrated steelmakers show no increase in their requirements. Prices are nominal and are subject to fluctuations occasioned by outside competition. Shenango Furnace Co. plans to shut down its one stack, recently active, at Sharpsville, Pa.

Boston—Pig iron sales continue light. While prices are not tested, they are unsettled by a good volume of foreign iron still available at low figures. Dutch iron is reported $16, delivered to nearby Providence points. Close to $16 is reported done at dock for Indian iron. Southern iron is $10, base, furnace, and sellers are holding to full differentials.

New York—Pig iron sales for the past week again amounted to 2000 to 2500 tons, including 100 tons of malleable for shipment to New England. Inquiry is light. Prices are unchanged.

Philadelphia—Carloads still comprise the bulk of pig iron sales. Eastern Pennsylvania foundry iron is $14.50 to $15, base, furnace. Southern iron is holding at $10, base, Birmingham. Royal Dutch iron apparently is $15 to $15.50, on cars at port of entry.

Buffalo—Pig iron continues to move with the same slowness that marked the early March trade. Prices are weak in the East and tonnage inquiry is lacking.

Youngstown, O.—Some tentative negotiations have been reported as pending between important steelworks producers and consumers of steelmaking grades. However, there are conversion strings attached to the matter, possibly involving coal and coke tonnages. Routine shipments continue to be made to consumers of foundry and malleable grades. It is reported the Warren, O., stack has been banked temporarily. Quotations on all grades are unchanged.

Cleveland—The reduction of 50 cents in the price of pig iron to $15.50, base, furnace, for local delivery, noted here a week ago, apparently has not stimulated demand as sales by local melters still are limited to carloads. Furnace interests with headquarters in Cleveland booked approximately 3000 tons in the past week, slightly less than in the week preceding. Releases for castings for the automotive industry continue fairly encouraging to pig iron sellers, tending to sustain shipments.

Cincinnati—Current pig iron sales are light, with no inquiries for second quarter. Buying during the past week was only in small lots, for a total of less than 1000 tons. Shipments indicate a slightly lower melt.

Chicago—Merchant sales are light. Malleable foundry shipping releases are slightly heavier this month. Concessions under $16.50, base, are less liberal than in recent weeks. The only signs of a quickened melt are renewal of activity at several railroad supply plants. Farm equipment prospects are not encouraging.

St. Louis—Melters are assuming a waiting attitude, purchasing only what they need from week to week. The leading local producer continues to quote $17.50, base, Granite City, but is meeting competition.

Birmingham, Ala.—Business is in lighter volume than furnace output. A few sales in 100-tons lots are reported in eastern and middle-western districts. Prices are steady.

Toronto, Ont.—Sales are holding up fairly well, but continue restricted to small lots for immediate use. The total for the past week was 500 tons. Prices are unchanged.

Ferroalloy Shipments Hold to Recent Volume

Ferroalloy Prices, Page 58

Pittsburgh—Demand for ferroalloys continues to lag. Shipments of ferromanganese and spiegeleisen are in about the volume of a month ago while specifications for some special ferroalloys are off slightly. Prices are unchanged, small lots of ferromanganese and spiegeleisen being quoted $75 and $27, respectively, in the spot market.

New York—Ferromanganese specifications are unchanged, with $75, duty paid, holding on lots up to 1000 tons. Domestic spiegeleisen, 19 to 21 per cent, is $27, furnace.

Chicago — Ferroalloys specifications have picked up slightly in the last few days, due to an increase in open-hearth activity. Much of the spot business in ferromanganese is in less-carload lots. Prices are unchanged.

Nut, Bolt Specifications Spurred by Price Rise

Bolts, Nuts, Rivets Prices, Page 51

Pittsburgh—A slight gain in specifications for bolts, nuts and rivets is noted, largely attributed to higher prices announced for second quarter on bolts and nuts. New contracts are being issued with bolts and nuts quoted 75 off and large rivets 2.25c. Production holds around 20 per cent.

Philadelphia—Quarterly contracts for bolts and nuts are being made freely at 75 off list.

Cleveland—An innovation in the rivet business occurred last week when one important maker decided to forego the formality of usual contracts to customers for second quarter. Accordingly, no advance second-quarter price has been named. It is presumed the present level of 2.25c, Cleveland, will be the market. Bolt and nut business is still restricted, though factors are pointing to success in application of the new 75 off list discount.

Chicago—Producers of bolts, nuts and rivets have closed a number of second quarter contracts on the advanced prices for bolts and nuts. Rivets remain unchanged despite reports that 2.30c, Chicago, for large structural rivets was to be advanced. Specifications show little gain.

Semifinished Steel Is Still in Quiet Market

Semifinished Prices, Page 58

Pittsburgh — Semifinished steel shipments and new business are unimproved. Prices are not clearly defined, the usual market being $26 to $27 for sheet bars, rerolling billets and slabs. Wire rods are steady at $37. Demand for forging billets is lighter, with the market continuing $33 to $34.

Youngstown, O. — Demand for sheet bars and billets from nonintegrated mills has diminished slightly. Open-hearth furnace operations were less active last week than in the week preceding, a temporary slackening. Prices hold at $27, Youngstown, Pittsburgh and Cleveland, for billets; and $26 for sheet bars.

Scrap + Baling = $$$

WE BUILD

BALING PRESSES

HYDRAULIC PRESSURE PUMPS

HYDRAULIC STRAIGHTENERS

SPECIAL HYDRAULIC PRESSES

ACCUMULATORS

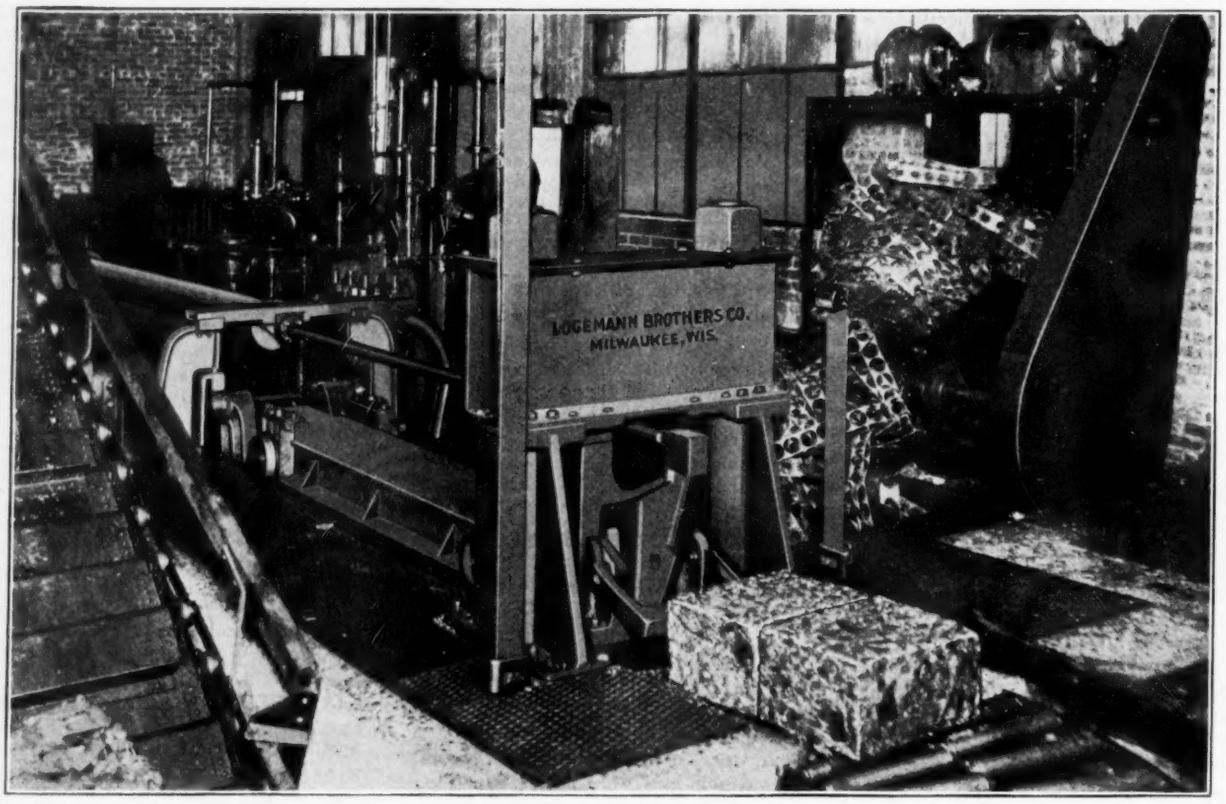
Write Us Your Problems

Hydraulically-compressed scrap commands at all times the best price - - can be more economically handled - - can be readily held for favorable markets.

Baling practically eliminates corrosion - - saves much heat in remelting - - permits easy loading of scrap cars to capacity.

The installation below is in a plant making automotive electrical equipment. Scrap comes to the baling room over the horizontal conveyor at the right, is caught by the hopper, while press is finishing a bundle, then automatically charged into press. Press cover shoves the finished bundles to the rollers carrying them to the inclined apron - conveyor at the left, this discharges directly into gondola-car outside.

Our Engineering Department, with years of experience on installations of all kinds, is at the service of interested scrap - producers. Write us.



LOGEMANN BROTHERS COMPANY

3126 W. BURLEIGH STREET MILWAUKEE, WISCONSIN

BRANCH OFFICES IN ALL PRINCIPAL CITIES

Scrap

Better Releases at Chicago and Prices Are Firm—General Dull Situation in Most Centers

Chicago—Heavier releases of steelmaking scrap in the last few days from the leading independent melter, a number of fair sales, and further shortages in some grades for shipment against contracts have quickened resistance to low prices and imparted a much stronger tone to the market. Some yard interests have revised their asking prices upward by as much as 10 per cent in the last few days. A large foundry purchased 2500 tons of railroad malleable at $7, delivered in the Chicago switching district. The leading independent steelworks melter has doubled its shipments from several sources of supply, after holding down all shipments for several weeks. This interest also bought a small amount of heavy melting steel at $7.25. Several

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	7.00 to 7.50
Boston, dealers	4.00 to 4.50
Buffalo, No. 1	8.00
Buffalo, No. 2	6.25 to 6.50
Chicago	6.75 to 7.25
Cinci., deal.	6.75 to 7.25
Cleve., No. 1	7.25 to 7.75
Cleve., No. 2	7.00 to 7.50
Det., No. 1 deal.	5.75 to 6.25
Det., No. 2 deal.	4.00 to 4.50
E. Pa. del. mill	7.00 to 7.75
N. Y. deal. R. R.	4.50 to 5.00
N. Y. deal. No. 2	3.50 to 4.00
N. Y. deal. yd.	3.50 to 4.00
Pitts. No. 1	10.00 to 10.50
St. L. No. 1 sel.	7.00 to 7.50
Federal, Ill.	6.50 to 7.00
Granite City, Ill.	6.00 to 6.50
Valleys, No. 1	10.00

COMPRESSED SHEETS

Buffalo, dealers	6.25 to 6.50
Chi. (Factory)	5.75 to 6.25
Cleveland	7.00 to 7.25
Detroit, dealers	5.75 to 6.25
E. Pa. new mat.	6.50 to 7.50
Pittsburgh	9.75 to 10.00
Pittsburgh	9.75 to 10.25

BUNDLED SHEETS

Buffalo	5.25 to 5.50
Cinci., deal.	6.00 to 6.50
Cleveland	6.00 to 6.50
Eastern Pa.	5.50 to 6.00
Pittsburgh	8.50 to 9.00
St. Louis	3.50 to 4.00

SHEET CLIPPINGS LOOSE

Chicago	3.50 to 4.00
Cincinnati	3.50 to 4.00
Detroit, dealers	3.00 to 3.75
St. Louis	3.50 to 4.00

STEEL RAILS SHORT

Birmingham	10.50 to 11.00
Boston, dealers	4.25 to 4.75
Buffalo	10.00 to 11.00
Chicago (3 ft.)	8.50 to 9.00
Chicago (2 ft.)	9.50 to 10.00
Cinci., deal.	10.50 to 11.00
Detroit, deal.	10.50 to 11.00
Pitts. (open-hearth, 3 ft. and less)	12.00 to 12.50
St. Louis	11.00 to 11.50

STOVE PLATE

Birmingham	6.50 to 7.00
Boston, con.	4.50 to 5.00
Buffalo	8.50 to 8.75
Chicago, net	5.75 to 6.25
Cinci., deal. net	4.00 to 4.50
Det., net deal.	3.00 to 3.50
Eastern Pa.	7.00
N. Y., deal. mill	4.00 to 4.50
St. Louis	6.50 to 7.00

COUPLERS, SPRINGS

Buffalo	9.75 to 10.25
Chicago	8.00 to 8.50
Eastern Pa.	8.50 to 9.50
Pittsburgh	10.75 to 11.25
St. Louis	8.00 to 8.50

ANGLE BARS—STEEL

Chicago	7.50 to 8.00
St. Louis	7.00 to 7.50

LOW PHOSPHORUS

Buffalo, billets and bloom crops	11.00 to 11.50
Cleveland bil. and bloom crops	14.00 to 14.50
Eastern Pa.	12.00
Pittsburgh billet bloom crops	13.00 to 13.50
Pitts., sheet bar crops	12.50 to 13.00

FROGS, SWITCHES

Chicago	6.75 to 7.25
St. Louis	7.50 to 8.00

SHOVELING STEEL

Chicago	6.75 to 7.25
Cleveland	6.25 to 6.50
St. Louis	6.50 to 7.00

RAILROAD WROUGHT

Birmingham	6.50 to 7.00
Boston, dealers	7.00 to 7.50
Buffalo, No. 1	5.00 to 5.50
Buffalo, No. 2	8.00
Chicago, No. 1	6.25 to 6.70
Chicago, No. 2	6.75 to 7.25
Cinci., No. 2	6.50 to 7.00
Eastern Pa.	9.00
N. Y., No. 1, deal.	5.00 to 5.50
Pitts., No. 2	10.00 to 10.50
St. Louis, No. 1	4.50 to 5.00
St. Louis, No. 2	6.50 to 7.00

SPECIFICATION PIPE

Boston	4.00 to 4.25
Eastern Pa.	8.50 to 9.50
N. Y., deal.	5.00 to 5.50

BUSHELING

Buffalo, No. 1	6.25 to 6.50
Chicago, No. 1	5.25 to 5.75
Cinn., No. 1 dl.	4.75 to 5.25
Cinn., No. 2	3.00 to 3.50
Cleve., No. 2	4.25 to 4.50
Det., No. 1 new deal.	4.50 to 5.00
St. L., No. 1	5.50 to 6.00
Val. new No. 1	9.00 to 9.50

MACHINE TURNINGS

Birmingham	3.50 to 4.00
Boston, dealers	1.05 to 1.55
Buffalo	4.75 to 5.25
Chicago	4.00 to 4.25
Cinn., deal.	3.25 to 3.75
Cleveland	4.00 to 4.50
Detroit	3.50 to 4.00
Eastern Pa.	4.00 to 4.50
N. Y., deal.	1.35 to 1.50
Pittsburgh	7.00 to 7.50
St. Louis	2.50 to 3.00
Valleys	7.25 to 7.75

BORINGS AND TURNINGS For Blast Furnace Use

Boston, dealers	1.25 to 1.50
Buffalo	6.00 to 6.25
Cinn., deal.	3.25 to 3.75
Cleveland	6.00 to 6.25
Detroit, deal.	4.00 to 4.50
Eastern Pa.	3.00 to 3.50
N. Y., deal.	1.35 to 1.50
Pittsburgh	6.75 to 7.25

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	3.50 to 4.00
Boston, chem.	5.50 to 6.50
Boston, deal.	1.05 to 1.55
Buffalo	5.75 to 6.25
Chicago	4.50 to 5.00
Cinn., deal.	3.25 to 3.75
Cleveland	6.00 to 6.25
Detroit, deal.	4.00 to 4.50
Eastern Pa.	3.00 to 3.50
E. Pa., chem.	10.00 to 11.00
N. Y., deal.	1.50 to 2.00
Pittsburgh	6.75 to 7.25
St. Louis	5.00 to 5.50

PIPE AND FLUES

Cinn., deal.	4.00 to 4.50

RAILROAD GRATE BARS

Buffalo	5.25 to 5.75
Chicago, net	5.50 to 6.00
Cincinnati	4.50 to 5.00
Eastern Pa.	7.00
N. Y., deal.	4.00 to 4.50
St. Louis	5.75 to 6.25

FORGE FLASHINGS

Boston, deal.	5.00 to 5.25
Buffalo	6.25 to 6.50
Cleve. ov. 10 in.	7.00 to 7.50
Detroit	5.00 to 5.50

FORGE SCRAP

Boston, deal.	1.50 to 2.00
Chicago	9.50 to 10.00
Eastern Pa., del.	6.75

ARCH BARS, TRANSOMS

Chicago, net	6.25 to 6.75
St. Louis	6.50 to 7.00

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	6.75 to 7.25
Chi., steelworks	5.75 to 6.25
Cleveland	6.75 to 7.00
Eastern Pa. del.	7.00 to 8.00
Pittsburgh, O. H.	8.75 to 9.25
St. Louis	5.00 to 5.50

STEEL CAR AXLES

Birmingham	11.50 to 12.00
Boston, ship. pt.	11.00 to 11.50
Buffalo	12.00 to 12.50
Chicago	11.25 to 11.75
Eastern Pa.	14.50 to 15.00
St. Louis	11.50 to 12.00

SHAFTING

Bos., ship. pt.	10.00 to 10.50
Chicago	7.30 to 7.85
N. Y., deal.	9.00 to 9.50
St. Louis	8.50 to 9.00
E. Penna.	13.00 to 14.00

CAR WHEELS

Birming. iron	8.50 to 9.00
Boston, iron	11.00 to 12.00
Buffalo, iron	9.25 to 9.75
Buffalo, steel	9.75 to 10.25
Chicago, iron	7.00 to 7.50
Chi., rolled steel	8.50 to 9.00
Cincinnati iron	8.50 to 9.00
E. Pa. steel	8.50 to 9.00
E. Pa. iron	10.00
Pitts. iron	10.00 to 10.50
Pitts., steel	11.00 to 11.50
St. Louis, iron	6.00 to 6.50
St. Louis, steel	6.50 to 7.00

NO. 1 CAST SCRAP

Birmingham	7.50 to 8.50
Buffalo (Mach.)	9.50 to 10.00
Buffalo, cupola	8.50 to 9.00
Boston, textile	7.00 to 8.25
Chicago, mach.	8.40 to 8.95
Chi., railroad	7.00 to 7.55
Chicago, agri.	6.45 to 7.00
Cinn., mach. cup.	9.50 to 10.00
Cleve. cupola	10.00 to 10.50
Det., net deal.	8.00 to 8.50
E. Pa. cupola	10.00 to 10.50
N. Y. cup. deal.	7.00 to 7.50
N. Y., del. local foundries	11.00
Pitts., cupola	9.50 to 10.00
San Fran., del.	13.50 to 14.00
Seattle	5.00 to 7.50
St. L. No. 1 ma.	7.00 to 7.50
St. L., No. 1	6.50 to 7.00

HEAVY CAST

Boston	6.50 to 7.00
Bost. mach. cast	8.00 to 9.00
Buffalo, break	8.00 to 8.50
Cleve., break	6.00 to 6.50
Detroit, auto, net deal.	10.00 to 10.50
Det., break., dl.	4.75 to 5.25
Eastern Pa.	9.00
N. Y. break, dl.	5.25 to 5.50
N. Y. No. 1 dl.	6.50 to 7.00
Pittsburgh	8.00 to 8.50

MALLEABLE

Boston R. R.	8.50 to 9.00
Buffalo	9.00 to 9.50
Chicago, agri.	6.50 to 7.00
Chicago, R. R.	6.50 to 7.00
Cinci., R. R. del.	8.75 to 9.25
Cinci., agri. del.	8.50 to 9.00
Cleveland, rail	10.00 to 10.50
Det. auto deal.	9.00 to 9.50
St. Louis, rail	5.50 to 6.00

RAILS FOR ROLLING 5 feet and over

Birmingham	9.25 to 10.00
Boston, deal.	5.50 to 6.00
Buffalo	8.50 to 9.00
Chicago	9.50 to 10.00
Eastern Pa.	10.00 to 10.50
New York	6.00 to 6.50
St. Louis	9.00 to 9.50

LOCOMOTIVE TIRES

Chicago, cut	8.00 to 8.50
St. L., No. 1	8.00 to 8.50

LOW PHOS. PUNCHINGS

Chicago	9.50 to 10.00
Buffalo	10.00 to 11.00
Eastern Pa.	11.00
Pittsburgh	11.00 to 11.50

dealers have had to pay that much for melting steel scheduled on early shipments. Western railroads have not released any scrap of consequence in this market for many weeks.

Boston—Consumers of scrap in the Worcester district are quoting prices taking full advantage of the freight rate reduction announced last week in STEEL, a difference of 64 cents, which is expected to lower the delivered price on No. 1 steel and other grades. The new rate is $1.25 against $1.89. Little scrap has moved since the operation of the new rate.

New York—Cast scrap delivered at Phillipsburg, N. J., is easier, $8 for heavy and $9 for machinery cast. Buying of No. 1 steel for barge storage has practically ceased at $5.50 and for shipment to Pittsburgh little better than $5 is being paid.

Philadelphia—Prices of steel and iron scrap are unchanged and trading is practically absent.

Buffalo—Scrap markets continue dull with neither sales nor inquiries. Prices are nominal but lack the test of tonnage inquiry to establish their firmness. Shipments are again being held up by some of the larger consumers who took some tonnage earlier in the month.

Pittsburgh—The scrap market tone has been impaired slightly by the failure of anticipated improvement in open-hearth operations to materialize. In view of present conditions no early increase in scrap purchases is expected. Buying is confined entirely to small lots and no important purchases of heavy melting steel or compressed sheets have been noted recently. The market on these grades is unchanged at $10 to $10.50 and $9.75 to $10.25, respectively. Machine shop turnings and railroad steel specialties are easier in a dull market.

Cleveland—Further orders against shipment of steel and iron scrap to large users here and in the valley have dulled the market. Prices are unchanged.

Detroit—Iron and steel scrap prices continue unchanged except that slack demand for the cast grades has lowered No. 1 machinery cast 50 cents to $7.50 to $8, while machine shop and short-shoveling turnings each has been advanced 25 cents. A steamer is being loaded with compressed bundles for shipment when navigation opens and it is reported the movement of this grade out of the Detroit district will show considerable increase this year. Scrap offerings by most automobile manufacturers are lower. The market is quiet, as a whole, but there is an underlying feeling that prices will go no lower.

Cincinnati—Better scrap buying sentiment has developed at some consuming points but orders continue light. Recent bids on railroad material tend to support present quotations, but only a small proportion of the three lists came into this immediate territory.

St. Louis—Demand for iron and steel scrap continues dull. Aside from a few carloads sales are lacking, and specifications on contracts are slow to develop. Interest of steel mills in second quarter supplies is confined to few tentative inquiries, more apparently to test the market than to close on tonnage.

Birmingham, Ala.—Purchases are for immediate needs and in small lots. Quotations are low and weak.

Toronto, Ont. — Iron and steel scrap sales are irregular. Consumers are seeking machinery cast in small lots. No future demand is reported, however. Stove plate and wrought scrap show some activity, while other lines were inactive. Steel scrap is dull and featureless with no shipments reported to the Hamilton district. Dealers are picking up special grades, but otherwise are not buying and price lists are unchanged.

Canadian Scrap

Dealers' Buying Prices

Per Gross Ton

MONTREAL

Iron axles	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

Coke

Foundry Requirements Are Reduced Slightly—Flurry in Domestic Demand Subsides

COKE PRICES, PAGE 58

Pittsburgh—Cessation of the recent period of cold weather has quieted activity in domestic heating coke after a sharp gain in demand extending over several days. Consumption of foundry coke is off slightly while demand for the furnace grade is quiet and unchanged. The market for the latter generally is $2.25 with foundry coke $3.25 to $4.50.

New York—Metallurgical coke specifications continue to lag, with prices unchanged. Beehive furnace coke is $2, Connellsville, and beehive foundry coke, $3 to $3.25, Connellsville, for standard grades, and $4.50, Latrobe, Pa., for premium brands. By-product foundry coke is $8.76 to $9.16, delivered Newark, N. J.; $10.50, New England; and $8.75, Philadelphia.

Cincinnati—By-product foundry coke demand has tapered, in accordance with a lighter melt in some foundries serving the automotive industry.

St. Louis—Aside from a flurry in heating coke, the situation remains unchanged. New orders for foundry fuel are lacking and specifications are disappointing. Prices are steady.

Birmingham, Ala.—Demand shows no improvement, production continuing at about 50 per cent of normal. Foundry coke holds at $4.50.

Japanese Steel Quota Up

Washington—The 1932 quota of the Japanese government steelworks has been fixed at 850,000 tons, 100,000 tons more than in 1931, according to Commercial Attache Butts at Tokyo. The increase is ascribed to heavier demands for steel products from Manchurian fishing interests. The Japanese have begun to manufacture tin plate.

The American Refractories institute, Oliver building, Pittsburgh, has issued a bulletin "Dry Pressing of Refractories." This bulletin, No. 32, was prepared by G. A. Bole, research professor, Engineering Experiment station, Ohio State university, Columbus, O.

Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 6.25c, Conn., for copper

Sheets	
Yellow brass (high)	12.50
Copper, hot rolled	15.37½
Lead shees, cut to jobbers	6.75
Zinc sheet (100-lb. base)	9.00
Tubes and Pipes	
Seamless yellow brass (high)	15.75
Seamless copper	14.87½
Rods	
Yellow brass (high, full turnings)	10.25
Naval brass	11.37½
Anodes	
Copper untrimmed	12.25
Wire	
Yellow brass (high)	12.50

Old Metals

Dealers' buying prices, cents lb. No. 1 Composition Red Brass

New York	3.25 to 3.50
Chicago	2.50 to 2.75
Cleveland	3.00 to 3.25
St. Louis	2.75
Heavy Yellow Brass	
New York	2.00 to 2.25
Heavy Copper and Wire	
New York	4.00 to 4.25
Boston	4.50 to 4.75
Chicago	2.75 to 3.00
Cleveland	3.25 to 3.50
St. Louis	3.00
Composition Brass Borings	
New York	3.00 to 3.25
Yellow Brass Tubing	
Cleveland	1.50 to 2.00
Light Copper	
New York	3.25 to 3.50
Chicago	2.50 to 2.75
Cleveland	2.75 to 3.00
St. Louis	2.75
Light Brass	
Boston	1.65 to 1.85
Chicago	1.50 to 1.75
Cleveland	1.25 to 1.50
St. Louis	1.50
Lead	
St. Louis	2.25
Zinc	
New York	1.00
Cleveland	1.00 to 1.12½
St. Louis	1.00
Aluminum	
Clippings, new, soft, Cleve.	11.00 to 11.50
Clippings, hard, Cleveland	7.50 to 9.00
Borings, Cleveland	2.75 to 3.25
Mixed cast, Cleveland	4.00 to 4.75
Mixed cast, Boston	3.25 to 3.50
Mixed cast, St. Louis	3.50 to 4.00

Secondary Metals

Remelt, aluminum No. 12	8.50 to 9.00
Brass ingots, 85-5-5-5	6.25

Metals

Prices Fairly Steady Despite Unfavorable Business News—Copper Price Firm at 6.00c

New York—Quotations on most metals held unchanged during the past week despite the appearance of much unfavorable business news which had a further retarding effect on sales. Lead eased off slightly but copper, zinc, aluminum and nickel held unchanged. Tin fluctuated slightly but eased somewhat compared with the preceding week.

Copper—Agreement on further curtailment of copper production to approximately 20 per cent of capacity by most world producers supported prices last week. Custom smelters held uniformly to 6.00c, Connecticut, on electrolytic for delivery to the end of August. Little or no metal was offered by resellers at shaded prices. Mine producers continued out of the market at the nominal asking price of 6.50c. About 15,000 tons of copper were sold for export last week at the special price of 6.12½c, c.i.f. European ports. The house ways and means committee Friday decided to take no action on the proposed 4-cent duty on copper. Brass and copper products and brass ingot held unchanged. Scrap fluctuated little.

Lead—Sellers cut prices $1 a ton at St. Louis and $2 a ton, delivered New York, to 3.00c and 3.15c a pound, respectively. These quotations were the lowest in 35 years. Buying did not pick up materially following the reduction. Refined lead stocks showed a further increase of 5676 tons in February to a new high level.

Zinc—Sales were generally light last week but prices held remarkably steady at 2.80c, East St. Louis, on prime western material. An advance of $1 a ton in Tri-State ore prices supported the market.

Tin—Interest in tin was slow with quotations showing only slight fluctuation but slightly downward. Sales were confined mostly to prompt positions and were at prices below usual importers' costs.

Antimony — Prices were mostly nominal but slightly lower.

Aluminum — Demand continued slow with prices, however, holding at unchanged levels.

Distillates More Active; Prices Continue Firm

New York—Distillate prices continue firm, with current consumption about keeping pace with output. Toluol is especially firm and slightly improved in demand. Phenol is more active, while shipments of naphthaline are showing a steady gain, mainly on contracts. Some spot business is noted at unchanged prices. Sulphate of ammonia prices are unsettled. In most items, especially distillates, distributors are doing little contracting at present prices.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.20
90 per cent benzol	0.20
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26

Per Pound at Producers' Plants in 250-Pound Drums

Phenol	0.16 to 0.17

Per Pound at Producers' Plants in

Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75

Per 100 Pounds Atlantic Seaboard

Sulphate of ammonia	$1.10 to $1.20

Quicksilver Higher

New York—Prices of quicksilver are stronger, sellers quoting $75 to $77 a virgin flask of 76 pounds on prompt delivery. This is several dollars more than the ruling quotations a week ago.

Prices of the Week, Cents a Pound

	Copper: Electro delivered	Copper: Lake delivered	Copper: Casting refinery	Straits Tin New York: Spot	Straits Tin New York: Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Antimony Spot	Antimony Ingot	Nickel
March 12	6.00	6.37½	5.75	22.00	22.55	3.25	3.05	2.80	22.90	6.15		35.00
March 14	6.00	6.37½	5.75	21.75	22.55	3.25	3.05	2.80	22.90	6.15		35.00
March 15	6.00	6.37½	5.75	21.65	22.15	3.15	3.00	2.80	22.90	6.12½		35.00
March 16	6.00	6.37½	5.75	21.75	22.25	3.15	3.00	2.80	22.90	6.12½		35.00
March 17	6.00	6.37½	5.75	21.70	22.20	3.15	3.00	2.80	22.90	6.12½		35.00
March 18	6.00	6.37½	5.75	21.87½	22.40	3.15	3.00	2.80	22.90	6.12½		35.00

Europe

Iron and Steel Production Is Making Some Gain—Market Shows Generally Dull Condition

London—(*By Cable*)—Selling of Middlesbrough steel is dull but some encouraging signs are appearing and some tonnage for naval purposes is expected to appear soon. Inquiries for east coast hematite are increasing. Pig iron producers on the west coast await buying from the United States.

No fresh buying of continental steel has appeared, in spite of present low prices. Trade in wire and strip is somewhat more active. Tin plate producers have reached an agreement in their pooling scheme but at present business is dull.

Pig iron production in February was 318,100 tons, a daily average of 10,969 tons, compared with 330,000 tons, and a daily average of 10,645 tons in January. In February 71 stacks were active, compared with 76 in January. Steel ingot and castings output in February was 480,600 tons, a daily average of 16,572 tons, compared with production of 430,000 tons, and a daily average of 13,871 tons in January. Iron and steel imports in February were 252,257 tons, compared with 170,435 tons in January. Exports of iron and steel were 139,777 tons, compared with 167,309 in January.

Pacific Coast

Quickening of Demand Appears and Buying Is Increasing

San Francisco—(*By Air Mail*)—Sales and inquiries for steel products on the Pacific Coast are more numerous and some fair sized tonnages are being placed. Awards include 478 tons of cast iron pipe for the Ojai Mutual Water Co., Ojai, Calif., placed with the American Cast Iron Pipe Co., and 320 tons of structural shapes for stadium seats at Stanford university, booked by the Judson-Pacific Co.

Among the larger lots of reinforcing bars booked was 183 tons for a crossing in Los Angeles. Bids are being taken on 400 tons for a college building in San Francisco and 300 tons for Pier No. 90, San Francisco. Bids have been opened on 200 tons for a teachers' college building at Arcata, Calif.

Distributors in the Los Angeles district announced new warehouse prices March 1 and San Francisco jobbers, March 10, announced new prices that corresponded with those in Los Angeles. Bars, plates and shapes in both cities are now quoted at 2.35c, carload lots, f.o.b. warehouse. In lots of 2000 pounds and up 2.75c applies while quantities below 2000 pounds take 3.15c. Los Angeles prices on galvanized No. 24 gage, hot rolled annealed sheets No. 24 and blue annealed sheets No. 10 gage are, 4.35c, 3.05c and 3.50c, respectively. San Francisco quotations are 4.55c for galvanized, 3.95c for black sheets and 3.50c for blue annealed sheets.

Seattle Demand Better

Seattle—Both local steel mills are down and will not resume until conditions improve. Lack of general construction has reduced demand for reinforcing and merchant bars. Business pending is less than 1000 tons. This includes 300 tons of reinforcing steel for the Fairbanks, Alaska, postoffice; 300 tons for highway work in eastern Washington; 162 tons for the East Marginal Way viaduct, Seattle, for which Fitton & Livergreen, Colman building, Seattle, are low bidders; and 80 tons for the Tonasket bridge, Okanogan county, S. G. Morin, Spokane, low at $33,452, general contractor.

Seattle officials have awarded the contract for the Kenyon street improvement involving 145 tons of 8 and 12-inch cast iron pipe, to be furnished by the United States Pipe & Foundry Co., Burlington, N. J. The same manufacturer also has the contract for 30 tons of 12-inch cast iron for the Graham street project, Seattle. Opening of bids for 1500 tons of 16 to 24-inch cast iron pipe for Yakima, Wash., scheduled for March 14, was postponed for about 30 days, due to technicalities.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, March 17

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	
PIG IRON		£ s d		£ s d
Foundry, 2.50-3.00 Silicon	$10.59	2 18 6	$ 9.72 to $10.21	2 0 0 to 2 2 0
Basic bessemer	10.14	2 16 0*	8.75 to 9.23	1 16 0 to 1 18 0
Hematite, Phos. .03-.05	11.58	3 4 0	.....	.....
SEMIFINISHED STEEL				
Billets	$19.46	5 7 6	$11.18 to $11.42	2 6 0 to 2 7 0
Wire rods, No. 5 gage	30.77	8 10 0	24.30 to 25.52	5 0 0 to 5 5 0
FINISHED STEEL				
Standard rails	$29.87	8 5 0	$28.55	5 17 6
Merchant bars	1.13c	7 0 0	.54c to .55c	2 9 0 to 2 10 0
Structural shapes	1.26c	7 15 0	.53c to .54c	2 8 0 to 2 9 0
Plates, †¼ in. or 5 mm.	1.42c	8 15 0	.64c to .65c	2 18 0 to 2 19 0
Sheets, black, 24 gage or 0.5 mm.	1.42c	8 15 0	1.27c to 1.29c	5 15 0 to 5 17 6
Sheets, gal., 24 gage, corr.	1.54c	9 10 0	1.54c	7 0 0
Bands and strips	1.54c	9 10 0	.74c to .77c	3 7 6 to 3 10 0
Plain wire, base	1.38c	8 10 0	1.18c	5 7 6
Galvanized wire, base	1.78c	11 0 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	1.78c	11 0 0	1.21c	5 10 0
Tin plate, box 108 lbs.	$ 2.90	0 16 0	$3.20	0 13 2‡

British ferromanganese $72 to $75 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

		£ s d	French Francs		Belgian Francs		Reich Marks	
Fdy. pig iron, Si. 2.5	$10.59	2 18 6	$ 9.46	240	$10.04	360	$16.45	69
Basic bessemer pig iron	10.14	2 16 0*	.....	.....	8.93	320	18.00	75.50
Furnace coke	2.40	0 13 3	5.08	129	4.46	160	5.10	21.40
Billets	19.46	5 7 6	13.00	330	11.86	425	23.72	99.50
Standard rails	1.34c	8 5 0	1.41c	785	1.57c	1.210	1.37c	127
Merchant bars	1.13c	7 0 0	.90c	500	.62c	480	1.24c	115
Structural shapes	1.42c	8 15 0	.99c	550	.62c	480	1.22c	112.50
Plates, †¼-in. or 5 mm.	1.46c	9 0 0	1.17c	650	.75c	580	1.43c	132
Sheets, black	1.42c	8 15 0§	1.28c	710‡	.88c	675‡	1.56c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	1.54c	9 10 0	2.43c	1,350	1.95c	1,500	4.00c	370
Plain wire	1.38c	8 10 0	1.75c	970	1.95c	1,500	1.92c	178
Bands and strips	1.54c	9 10 0	.90c	500	.88c	675	1.44c	133

*Basic. †British ship-plates, Continental, bridge plates. §24 ga. ‡1 to 3 mm. basis price.
British quotations are for basic open-hearth steel, Continental usually for basic-bessemer steel.

FULL FINISHED AUTOMOBILE SHEETS

MANUFACTURERS of automobiles, metal furniture, etc., know that they can depend on Apollo Steel Company to furnish full-finished steel sheets of a quality that will meet their deep drawing requirements no matter how unusual or difficult they may be.

Apollo Steel Company's plant and equipment is of the most modern type known, and we have surrounded our mechanical advantages with an established organization of men who have made a life long study of the intricacies of sheet steel manufacture.

APOLLO STEEL COMPANY

General Offices: APOLLO, PA.

Pittsburgh Office: Oliver Bldg.

Branch Offices

BOSTON	3 Harris Ave.	NEW YORK	1372 Hudson Term. Bldg.
BUFFALO	Marine Trust Bldg.	PHILADELPHIA	607 Otis Bldg.
CHICAGO	180 N. Michigan Ave.	ROCHESTER	P. O. Box 104
CLEVELAND	1901 Union Trust Bldg.	SAN FRANCISCO	Monadnock Bldg.
CINCINNATI	400 Dixie Terminal	SEATTLE	2712 Fourth Ave. So.
DAYTON	1959 Rugby Rd.	ST. LOUIS	2817 Laclede Ave.
DETROIT	2034 Dime Bank Bldg.	SYRACUSE	Hills Bldg.
INDIANAPOLIS	3669 Birchwood Ave.	LOS ANGELES	New Orpheum Bldg.
LYNCHBURG	612 Krise Bldg.		

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

	Steel			Iron	
In.	Blk.	Gal.	In.	Blk.	Gal.
½	58	44½	½	25	7
¾	62	50½	¾	30	13
1—3	64	52½	1—1¼	33	17
			1½—2	37	20

LAP WELD

2	57	45½	2	25	11
2½—6	61	49½	2½—3½	30	15
7—8	58	45½	4—6	32	19
9—10	56	43½	7—8	31	18
11—12	55	42½	9—12	28	13

BUTT WELD

Extra strong, plain ends

½	55	44½	¼ & ⅜	+11	+46
¾	60	49½	½	25	9
1—1½	62	51½	¾	30	14
2—3	63	52½	1—2	36	20

LAP WELD

Extra strong, plain ends

2	55	44½	2	31	15
2½—4	59	48½	2½—4	36	22
4½—6	58	47½	4½—6	35	21
7—8	54	41½	7—8	33	19
9—10	47	34½	9—12	23	10
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. Direct mill shipments, base, 5 and 2½. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload discounts, f.o.b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½ 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft. 55%
Selected lengths, 1—18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir. ....$32.00 to 33.00
Four-inch, Birmingham .... 36.00 to 37.00
Four-inch, Chicago ..... 41.40 to 43.40
Six to 24-inch, Chicago..... 38.40 to 40.40
Six-inch and over, N. Y..... 28.00 to 30.00
Four-inch, New York ..... 34.50 to 36.50
Stand. fittings, Bir. base.... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

STEEL BARS

Baltimore	2.75c
Boston	3.25c
Buffalo	3.00c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	2.65c
Los. Ang.	2.35c
New York‡(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.60c
Portland	2.50c
San Fran.	2.35c
Seattle	2.50c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS

Baltimore	2.75c
Boston	3.25c
Buffalo	3.15c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia	2.45c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS

Baltimore	2.35c-3.00c
Boston	3.25c
Buffalo	2.95c
Chattanooga	3.00c
Cincinnati	3.00c
Cleveland	2.10-2.25c
Detroit	2.85c
Houston	3.00c
Los. Ang. cl.	1.90c
Los Ang., lcl	2.20c
New York	2.65c-3.10c
Phila.	2.26½c
Pittsburgh	2.60c
San Fran. cl.	2.60c
San Fran. lcl	2.80c
Seattle	2.50c
St Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES

Baltimore	2.75c
Boston	3.35c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los. Ang.	2.35c
New York(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.85c
Portland	2.50c
San Fran.	2.35c
Seattle	2.50c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.50c

PLATES

Baltimore	2.75c
Boston	3.35c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	2.35c
New York(d)	3.30c
Philadelphia	2.45c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	2.50c
San Fran.	2.35c
Seattle	2.50c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.50c

NO. 10 BLUE

Baltimore	3.25c
Boston	3.50c
Buffalo	3.50c
Chattanooga	3.50c
Chicago	3.20c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.35c
Houston	3.35c
Los Ang.	3.50c
N. Y.	3.00c
Portland	3.50c
Phila.*† (e)	2.90c
Pitts.**	3.00c to 3.10c
San Fran.	3.50c
Seattle	3.50c
St. Louis	3.45c
St. Paul	3.40c
Tulsa	3.70c

NO. 24 BLACK

Balt.*†	3.50c
Boston	4.20c
Buffalo	4.10c
Chattanooga	3.65c
Chicago	3.55c
Cincinnati	3.75c
Cleveland	3.25c
Detroit	3.50c
Los Ang.	4.05c
New York	3.50c-3.65c
Phila.*†(e)	3.40c
Pitts.**	3.40c
Portland	4.00c
San Fran.	3.95c
Seattle	4.00c
St. Louis	3.80c
St. Paul	3.545c
Tulsa	4.75c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	4.75c
Buffalo	4.35c
Chattanooga	3.95c
Chicago	4.10c
Cincinnati	4.25c
Cleveland	3.75c
Detroit	4.00c
Houston	4.25c
Los. Ang.	4.35c
New York	4.00c-4.10c
Phila.*†(e)	3.50c
Pitts.**	3.90c
Portland	4.50c
San Fran.	4.35c
Seattle	4.50c
St. Louis	4.35c
St. Paul	4.23c
Tulsa	5.10c

BANDS

Baltimore	3.25c
Boston	3.75c
Buffalo	3.35c
Chattanooga	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	3.65c
Los Ang.	4.30c
New York(d)	3.40c
Philadelphia	2.75c
Pittsburgh	2.95c
Portland	3.50c
San Fran.	3.75c
Seattle	3.50c
St. Paul	3.75c
Tulsa	3.45c

HOOPS

Baltimore	3.25c
Boston	4.90c-5.40c
Buffalo	3.90c
Chicago	3.50c
Cincinnati	3.75c
Cleveland	3.55c
Det. No. 14 & lighter	3.65c
New York	3.75c
Philadelphia	3.00c
Pittsburgh	3.60c
Seattle	4.90c
St. Paul	3.75c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.75c
Chicago	3.10c
Cincinnati	3.50c
Cleveland	3.10c
Detroit	3.40c
Los Ang. (a)	4.50c
New York	3.30c
Philadelphia*	3.30c
Pittsburgh	3.10c
Portland (a)	4.50c
San Fran.(a)	4.25c
Seattle (a)	4.50c
St. Paul (a)	3.85c
St. Louis	3.35c
Tulsa	4.65c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.25c
Chicago (soft) (b)	5.65c
Cincinnati	5.80c
Cleve. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(b) Net base straightening, cutting, boxing 1 ton or more.

(c) Plus mill, size and quantity extras.

(d) Minus quant. diff.

(e) New mill classif.

‡Domestic bars.

*Plus quan. extras.

**Less than 25 sheets.

*†50 or more bundles.

Machinery

NEW model Ford cars have not as yet been released for public inspection, hence the effect of their release still is being speculated upon hopefully by builders of industrial machinery. In the meantime, the low state of the machinery market is accentuated by a letdown in government purchases. Relatively small and scattering though such purchases have been, they have constituted an important factor to many machinery builders ever since the virtual disappearance of Russian business. Hopes for railway shop equipment sales raised in the Cleveland district recently have been blighted by a heavy layoff of personnel.

New York — Machine tool and other industrial machinery volume, both of inquiry and sales, shows little change and still is confined to scattering, individual items. Repair part business is slightly more active. With few exceptions, industrial plants continue to operate on curtailed production schedules, thus precluding possibility of substantial inquiry for new equipment for the time being at least.

Bids are in on two engine lathes for Philadelphia navy yard. Bids close March 29 on a planer for San Diego and on March 22 on a precision lathe for Hampton Roads. Government inquiry has slumped, although a considerable number of machines, on which bids already are in, are yet to be placed. One of the recent awards was a navy contract amounting to $11,077.90 for gears and spares, made to Waterbury Tool Co.

Worcester, Mass.—Although general business conditions warrant no expectation of an immediate upturn, Worcester manufacturers did receive some orders during the past few days on transactions on which they have been working for several weeks.

Reed-Prentice Corp. booked four lathes for the navy, two of 14-inch size for the naval air station at Hampton Roads, Virginia, and two of 16-inch gage for use aboard ship.

Ford again is in the market for grinders, placing repeat orders with several manufacturers in this territory, especially with Heald Machine Co., Worcester, Mass., and Fitchburg Grinding Co., Fitchburg, Mass. Other grinders are on inquiry from parts makers whose ultimate production rests with the success of the new Ford models which now are entering into production. Inquiry continues light however, and no substantial, concerted production equipment buying move by big business interests seems imminent.

Sanford Riley Stoker Co. of Worcester, closed this week a $200,000 order for power plant equipment for a large textile plant in New Jersey.

Pittsburgh—Activity in the machine tool market continues at a standstill, no major change being noted in orders or inquiries. Business is made up of occasional purchases of individual tools, a scarcity of large lists still prevailing. Inquiries also are restricted, in size as well as in number. Some buying for Pittsburgh schools is in prospect, but definite inquiries have not been issued.

Cleveland—Although releases on new production equipment from the automobile industry have not as yet materialized to any extent, such releases still are expected. Belief is general here that dealers will have new model Fords for display purposes by the last week in March.

Slight increases in employment in several local metalworking plants have been offset by layoff of nearly 1200 men in one of the large railway shops where a large repair program has been underway. Listed stocks of machine building companies have been depressed this week by further reports of unsatisfactory earnings.

Harris-Seybold-Potter Co., builder of printing machinery, reports the acquisition of Morrison Stitcher Co., Buffalo. Manufacturing operations will be removed from Buffalo to one of the Ohio plants of Harris-Seybold-Potter, in line with this company's policy of consolidation. No new machine tools will be involved, so far as is known.

Successful accomplishment of a large and unusual project by a Cleveland engineering organization is marked by announcement from Russia that the plant at Magnetogorsk, constructed by Arthur G. McKee & Co., now is producing pig iron.

Chicago—No sign of active spring seasonal business is noted in the machinery market here. One or two builders in this territory find March business slightly ahead of February, but this is due in part to government contracts. Most dealers have had an inconsequential volume of business in March, and describe the first quarter thus far the poorest for any three-month sales period in recent years. More life is shown in the Milwaukee district, where a few orders for small tools have been closed recently. Some contemplated work also is up for figures there.

While Studebaker Corp., South Bend, Ind., is rebuilding a few tools, this will not affect production equipment in that plant on an important scale. A local steelworks continues to postpone purchase of contemplated equipment carried over from last year, and may issue new inquiries when it is ready to buy. Inquiry for used tools again has become a shade more active. While concessions have been made in prices of new tools as disclosed in bids on United States navy department inquiries, prices are holding in such private work as comes up for quotations.

February Figures Indicate Improved Crane Business

New York—New orders, shipments and unfilled bookings increased slightly in February, according to Overhead Electric Crane Institute. Eighteen units were shipped, having tonnage capacity of 140, and valued at $56,540. This compares with eight units shipped in January, these having a capacity of 134¼ tons, and value of $40,319.

New orders included 20 cranes with a tonnage capacity of 144½, valued at $55,893. In January, bookings included 18 units, tonnage capacity 138¼, valued at $65,179.

Unfilled orders on March 1 totaled 38 units, tonnage capacity 851¾, valued at $396,114. This is a gain over the unfilled bookings of Feb. 1, when 32 units were on order with a tonnage capacity of 807, valued at $382,761.

Hoist Association Reports Large Gain in February

New York—Members of Electric Hoist Manufacturers' association report that the number of hoists ordered during February increased 75.308 per cent over the previous month. Value of such orders increased 62.0705 per cent, as compared with January. Shipments were 37.988 per cent greater in February than in January.

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

BOSTON—Hunt Spiller Mfg. Corp., 383 Dorchester avenue, South Boston, manufacturer of gun iron castings, is building a substation for transforming high-tension current for its industrial use, costing $20,000 for building and equipment.

BOSTON—Edison Electric Illuminating Co. is making alterations in its substation, 669 South street, West Roxbury, Mass., to cost $15,000. Similar alterations will be undertaken shortly at its station on L street, South Boston.

New York

BROOKLYN—Metal Litho Corp. has been incorporated with $250,000 preferred and 5000 shares common stock to manufacture metal receptacles, by B. L. Kraus, 19 West Forty-fourth street, New York.

COXSACKIE — Fabricated Steel & Mfg. Corp. has been incorporated with $75,000 preferred stock and 100 shares common stock to manufacture steel products, by I. Siegel, 51 Chambers street, New York.

NEW YORK—Electrodryer Corp. has been incorporated with $100,000 capital to manufacture drying machines, by S. V. Ryan, Albany, N. Y.

NEW YORK—Ericson Speedmatic Co. has been incorporated with 200 shares common stock to manufacture surfacing machines by A. P. Blanck, 253 Broadway.

NEW YORK—Monroe Combustion Co. has been incorporated with 100 shares no par value to manufacture coal-burning equipment, by S. Perlo, Corona, N. Y.

New Jersey

PATERSON—Abe Ziotkin Iron & Metal Co. has been incorporated with $25,000 capital to deal in metal building materials, by Saul M. Mann, 125 Ellison street, Paterson, N. J.

Pennsylvania

FORD CITY—Ford City Sanitary Co. has been incorporated with $5000 capital to manufacture sanitary ware, by David E. Gulick, Kittanning, Pa.

Michigan

DETROIT—Little Dutch Stamping Co. Inc., 3315 Barlum Tower, Detroit, has been incorporated with $50,000 capital to manufacture cans, sheet metal parts and carbonizing equipment, by Abraham Kaufman, Detroit.

GRAND RAPIDS—Sheet Steel Development Co., 601 Ottawa avenue, has been incorporated with $5000 capital to manufacture sheet metal products, by H. Fred Cox and associates, Grand Rapids.

Indiana

INDIANAPOLIS — Standard Unit Parts Corp. has been incorporated with 7500 shares no par value to manufacture machinery, by Kurt F. Pantzer, Ernest R. Baltzell and William G. Sparks.

Illinois

CHICAGO—American Plierench Corp., 4809 North Ashland avenue, has been incorporated with 500 shares no par value to manufacture machinery.

CHICAGO—Kernis Junk Co., Inc., 1459 Blue Island avenue, has been incorporated with $5000 capital to deal in and prepare metal and other scrap, by Robert Rafferty and associates.

CHICAGO—D. L. & F. Co., 900 West Lake street, has been incorporated with 4000 shares no par value to manufacture products from steel, iron and other metals, by Ning Eley, 1034 Otis building, 10 South La Salle street.

NILES CENTER—Phillips Petroleum Co., A. H. Riney, chief engineer, has let contract to Austin Co., Chicago, for a warehouse and garage, 60 x 200 feet and 20 x 40 feet, respectively, costing $100,000.

Southern States

FERRIDAY, LA.—Ferriday Stove & Mfg. Co. has let a contract for rebuilding its burned plant.

Oklahoma

OKMULGEE—Modern Auto Repair Inc. has been incorporated with $20,000 capital to operate an automotive machine shop, by W. C. McLeod.

TULSA—Magic City Steel & Metal Co. has been incorporated with $3000 capital to prepare and deal in scrap metals, by Henry A. Kaufman, 901 East Third street.

Texas

HOUSTON—State highway commission, Austin, Tex., is taking bids on a warehouse and repair shop building here, 50 x 126 feet, to cost $10,000.

Wisconsin

EAU CLAIRE—Gillette Rubber Co. has completed a $50,000 boiler plant addition with 2100 horsepower capacity and will undertake shortly improvement of its tube manufacturing department at a cost of $100,000.

STURGEON BAY — Sturgeon Bay Boat Works Inc. has been incorporated with $50,000 capital to manufacture boats and marine equipment by Valmar G. Bird and Palmer Johnson of Sturgeon Bay and B. L. Parker, Green Bay, Wis.

WAUPACA — Plant Food Appliance Co. has been incorporated with $8000 capital to manufacture machines for applying commercial fertilizer to large ground areas, by James H. Dance and Ira A. Christoph of Waupaca and Ruben S. Bergen, Scandinavia, Wis.

New Mexico

CARLSBAD—United States Potash Co., C. A. Pierce, manager, is considering construction of a power plant and refinery at its mine here, to handle production of 50,000 tons annually.

Dominion of Canada

NEW WESTMINSTER, B. C.—Westminster Iron Works, W. J. Reid, manager, will rebuild portion of its plant recently burned with $50,000 damage.

TORONTO, ONT.—Wallace & Tierman Co., Newark, N. J., manufacturer of water purification equipment, will establish a branch plant here to manufacture its products for distribution in Canada.

MONTREAL, QUE.—Atlas Construction Co. Ltd. has been given a contract for an addition to the waterworks plant at Point St. Charles, to cost $580,000, including new buildings and installation of six pumps to double capacity of low level station.

New Trade Publications

LUBRICATION — Texas Co., New York, in its current issue of *Lubrication* discusses the problem of meeting load demands in industry and the adaptability of the roller bearing.

STOKERS—Joseph Harrington Co., subsidiary of the Whiting Corp., Harvey, Ill., has issued bulletin No. 101 on its stoker, containing construction features and information for the stoker buyer.

NICKEL—A reprint of *The Story of Nickel*, by William H. Baldwin, public relations counsel to the International Nickel Co., New York, has been issued by that company. It is full of interest in its narrative of the discovery, difficulties and final emergence of this metal into general use, with great advantage over others for many uses.

INDICATOR-RECORDER — Catalog No. 1025 by the C. J. Tagliabue Mfg. Co., Brooklyn, N. Y., describes its new type of duplex indicator-recorder for automatic boiler flue gas analyses, which analyzes chemically and indicates and records electrically. Charts explain importance of knowledge of the composition of flue gases and the relations of their constituents. Construction and operation of the indicator-recorder are illustrated in diagrams.